



Livestock Health Product Development and Service Delivery

South Asia Strategy 2012 – 2017



Protecting Livestock – Saving Human Life



Acknowledgements

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1 GALVmed South Asia Policy Statement

Purpose

To provide guidance and direction in GALVmed's activities in South Asia in order to achieve GALVmed's mission as articulated in GALVmed's vision and mission and in GALVmed's Business Plan (2011–2017).

Scope

This policy applies to all GALVmed activities in South Asia. Operations elsewhere that impact on those in South Asia will take cognisance of this policy statement.

The fulfilment of this policy is the joint responsibility of all GALVmed staff, particularly the Directors' Group, the South Asia Programme Manager and other South Asia staff; oversight will be provided by the GALVmed Board.

Statement

In line with the GALVmed Business Plan (2011–2017), noting the lessons learned in South Asia by other organisations and by GALVmed in 'Protecting Livestock Saving Human Life Phase 1', conscious of international trends (including shifts in the international political economy), aware of debates on climate change and environmental impact and their implications, recognising the complexities in national and international trade and marketing, acknowledging the challenges regarding trans-boundary animal diseases and limitations to the development of and access to animal health tools to poor livestock farmers, GALVmed issues this statement on South Asia:

- GALVmed shall concentrate its operations in five (5) countries in South Asia: India, Nepal, Bangladesh, Sri Lanka and Bhutan. Project implementation will begin in India and Nepal and will be scaled out to Bangladesh, Sri Lanka and Bhutan. These countries are chosen on the basis of the potential high impact that GALVmed has on improving livelihoods; 40% of the world's poor are located in these five countries and over 80% of all poor in South Asia live in rural areas and directly or indirectly depend on agriculture and livestock for their livelihood.
- The priority diseases in South Asia are Newcastle Disease, Peste des Petits Ruminants, Porcine Cysticercosis, Brucellosis (with focus on small ruminants) and Classical Swine Fever. Cross-species helminthiasis is also identified as an important constraint to livestock health and productivity. These shall form the priority diseases for GALVmed for this region.

- GALVmed's focus species for South Asia shall be poultry and small ruminants, which constitute the livestock backbone for virtually all poor livestock keepers in South Asia, while pigs would also be considered as they play an important role in specific geographical areas for some very poor and disadvantaged communities. These species are expected to play a significant role in the coming decades in impacting on the livelihoods of poor farmers.
- GALVmed shall take leadership from local organisations in the target countries. It shall be guided by advice from the South Asia Regional Advisory Committee (SARAC), the South Asian Association for Regional Cooperation (SAARC), governments of the respective countries, and ongoing initiatives on issues relating to priorities for focus, GALVmed positioning, potential partners, communication and modi operandi in South Asia.
- GALVmed shall continue to build on existing partnerships in South Asia and shall seek new partners as appropriate to form strategic, technical and implementing partnerships spanning the whole value chain.
- In particular, GALVmed shall seek to facilitate the formation of South–South partnerships particularly in technical areas and North–South collaborations.
- Market Development and Global Access are important GALVmed themes, while sustainability is a key GALVmed principle. GALVmed shall work with partners as appropriate to put these themes and principle in practice. It shall specifically aim to facilitate building capacity in market development, particularly around concepts such as 'last mile' and 'last yard' which will ensure the demand and supply of GALVmed's products and other spill overs are met sustainably and that Global Access is achieved. Partnership with the private sector remains a key strategy for GALVmed in South Asia.
- The five target South Asia countries are diverse, implying that interventions need to be tailored to particular conditions. The livelihoods approach shall be adopted for South Asia. This approach takes into account the socio-economic and socio-cultural aspects of target beneficiaries on issues such as gender, religion, caste and class. Gender shall, in particular, be a major theme in projects in South Asia.

Adopted this _____ day of _____ 2012

Signed _____

2 Executive Summary

Of the range of animal health diseases GALVmed covers, the five most relevant for poor female/male livestock keepers in South Asia are: 1) **ND: Newcastle Disease**; 2) **PPR: peste des petits ruminants**; 3) **PC: porcine cysticercosis**; 4) **Brucellosis (with focus on small ruminants)**; 5) **CSF: classical swine fever**; and one condition: **helminthiasis** (internal parasites).

Based on experiences made during the first year of GALVmed's operations in South Asia, the draft business plan of GALVmed (2011–2017) and through consultations with the different actors, including Regional Advisory Committee, the South Asia Strategy for 2012–2017 was developed. Apart from ND, PPR and PC, two more diseases namely **Brucellosis (small ruminants)** and **classical swine fever** as well as a condition – **helminthiasis** (internal parasites) – were proposed as focus diseases. Small animals (backyard poultry, small ruminants and pigs), which in the South Asian context are typically reared by the disadvantaged communities in which women often play a leading role, remain the focus livestock species, as large animals (cows, buffalos, etc.) receive relatively a lot of attention.

Although emphasis remains on activities geared towards relevant veterinary product development and market access, the specific problem to be addressed in the region concerns the delivery of animal health and livestock extension at household level; i.e. the so-called '**Last Mile**'. In addition, the advantages of the technological and innovative capacity present in the region will be explored when developing animal health tools that would address the needs of poor female/male livestock keepers within South Asia

and beyond (e.g. Sub Sahara). In this regard, GALVmed SA will facilitate South–South and North–South partnerships.

The on-going pilot activities in testing different delivery models will continue as well as expand, in order to cover the additional diseases and new (remote) geographical areas. As two out of the five focus diseases are zoonotic, the **One-Health approach** is proposed, as the work of Community Animal Health Workers and Human Health Workers has the potential to be integrated.

Investing in establishing **Species platforms**, within which **disease forums** are formed to work around specific diseases of a species as and when opportune, is considered innovative for the South Asia setting; apart from sharing, working on hot issues, etc., it can also fulfil the important task of knowledge management.

A profound **monitoring and evaluation system** is proposed so that it provides an evidence base which can be used to up-scale good practices and influence policies, as well as veterinary legislations and regulatory frameworks. Due to reduction of disease incidences and improved husbandry practices, it is estimated that considerable financial gains can accrue. However, the highest gains are to be achieved through the **established sustainable delivery models**.

In terms of mode of operation, GALVmed SA will in principle be the **facilitator** and, where opportune, the **know-how provider**; it acts as broker, facilitator, coach and knowledge provider.



3 Introduction and general overview

Despite reasonable to outstanding economic growth rates¹, South Asia (Sri Lanka, Bhutan, Bangladesh, Nepal, Pakistan and India) is home to 40% (app. 600 million) people living on less than \$1.25 a day, and 74% (app. 1.1 billion) on less than \$2 a day (Kumar, 2005), (DFID, 2011). The development problem is complex and multidimensional, with significant economic, political, social and environmental challenges; see **Box 1: Poverty's cousin, under-nutrition** on the right.

In South Asia, where normally the population density is high, animals continue to play an important role in sustaining the livelihoods of rural people, while a significant number of urban and peri-urban dwellers also rely on livestock. Livestock health, human health and poverty are interrelated, as has been recognized more than ever before since the Avian Influenza outbreaks (FAO O. W., 2008) (Shaheen Akter, 2008).

Focusing therefore on **animal health product requirements of poorest livestock keepers** is a key window to initiate the changes needed to positively influence the entire system.

Small stock rearers keep small ruminants, pigs, poultry and other animals such as rabbits, guinea pigs, bees, etc.; this is often the domain of women. The animals are kept for a myriad of purposes – religious, ethnic, social – and are readily slaughtered for local consumption or sold to meet immediate cash needs. Generally representing the poorer fraction of the livestock farmers, who are on the borderline of poverty and normally risk averse, this group of **disadvantaged rearers of small animals**²³, continues to be a major focus for GALVmed South Asia.

Box 1 Poverty's cousin, under-nutrition

'The decline in India's poverty rates compares well against the more lauded performance of China. Over the period 1981–2005, China's poverty rates declined from 40 per cent to 29 per cent, while India's rates declined from 60 per cent to 42 per cent (both represent about a 30 per cent proportionate decline). Studies find that economic growth continues to reduce poverty, but is not reducing poverty's cousin, under-nutrition; "India has emerged as one of the most important rising global powers, but it also has one third of the world's undernourished children and one of the highest rates of child under-nutrition in the world. Under-nutrition causes 35 per cent of under-5 child deaths, impairs learning outcomes, increases the likelihood of being poor and is linked to illness or death during pregnancy". (Haddad, August 27, 2011); (Haddad L., 2009).

Amongst others, 'making agriculture more pro- nutrition by focusing it more on what people living in poverty grow, eat and need nutritionally' and 'continue the fight against gender and social exclusion' are proposed actions to make the environment supportive to nutrition.

- 1 Regarding no or little correlation between economic growth and rate of poverty reduction, consult Annex five: South Asia – selected poverty related indicators, page 30
- 2 This group consists of scheduled tribes (ST), scheduled castes (SC), landless and marginal female/male farmers of other Backward Castes. ST are also called tribal communities or 'Adivasis' and SC 'dalits' or 'harijan' or 'untouchables'. The Caste system is a rigid hierarchical system of Hindu society comprising endogamous social classes (castes) based on ritual purity. Castes with 'unclean' occupations have lower status. SCs have the lowest status in Hindu caste hierarchy, while STs are traditionally outside the Hindu caste hierarchy. This caste hierarchy remains commonplace all over South Asia. For instance, research conducted in two Indian States (Andhra Pradesh, Madhya Pradesh) regarding livestock and poverty reduction potential and over a longer period of time, found that 'low income (predominantly SC and ST) households do not find a ready market for livestock products among higher caste households, so that the incentive to invest in livestock is reduced', (Priya Deshingkar, 2008).
- 3 Social discrimination is a powerful exclusionary factor in many Indian States. Research following children over time finds that being from a Scheduled Caste or a backward tribe (ST) substantially increases the probability of a child being stunted – and persistently so. (Haddad, August 27, 2011).

Although relatively short and modest, GALVmed presence in South Asia has been contributing to building up an understanding of opportunities, challenges and knowledge gaps with regard to regional animal health product needs such as: access to vaccines by the poorest livestock keepers; the socio-economic impact of diseases affecting their animals; decision makers controlling the regulation and purchase of animal health products; the key players in the delivery of these products; and barriers to sustainable markets.

One of the key lessons⁴ learnt has been that the supply side of a market for veterinary services in rural areas⁵ is largely underdeveloped, implying that millions of rural households depending on livestock for their livelihoods have no access to animal health products – or extension services. The major gap in the delivery chain is at the end, namely ‘delivery at household level’, as depicted below in **Diagram 1: The last mile of the livestock service delivery.**

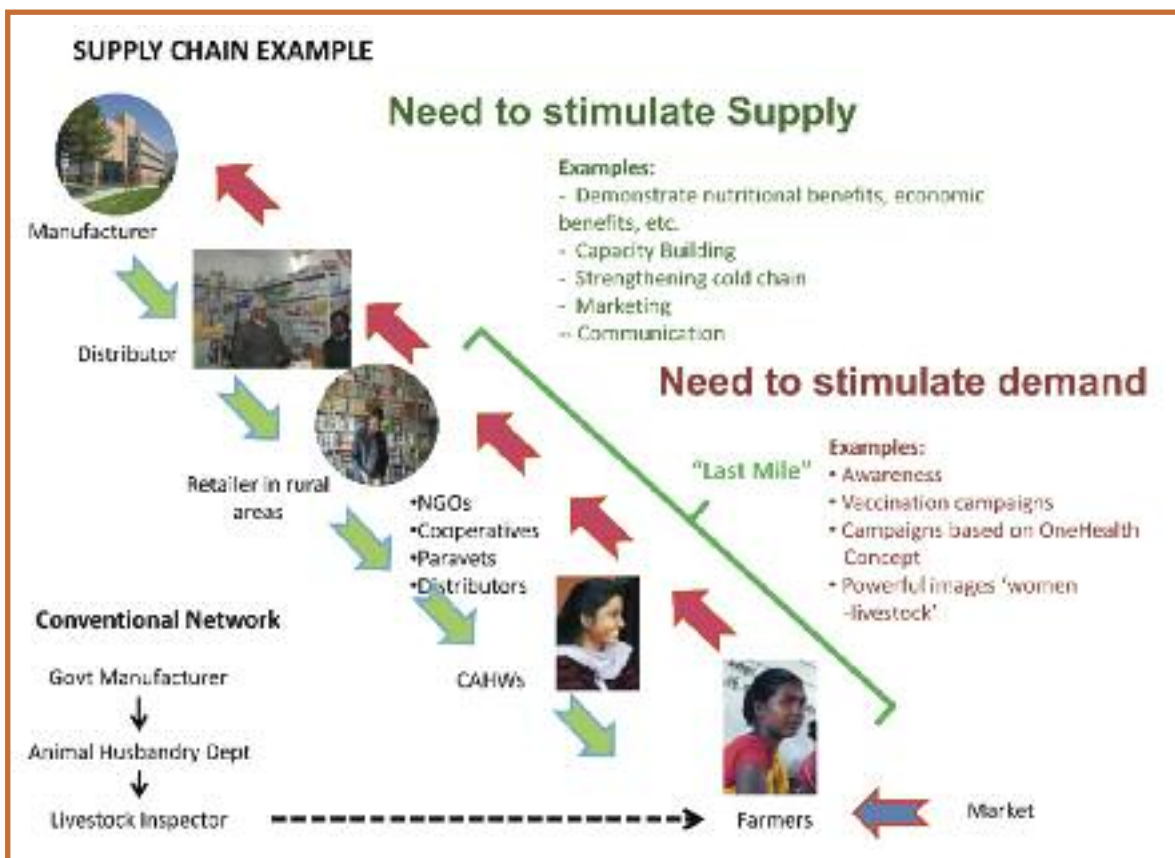


Diagram 1: The last mile of the livestock service delivery

In terms of technological and innovation capacity to develop animal health tools that would address the needs of poor livestock keepers, South Asia is advanced.

Keeping the overall framework of GALVmed (vision and mission statements) in mind, this write up presents the strategy for South Asia, and the annexed overview provides a summary in a matrix format⁶.

Through GALVmed’s facilitation, others could benefit, for instance via South–South partnerships. In this regard, South Asia has the potential to be a great source of innovative pro-poor technologies.

⁴ An overview of lessons learnt from different like minded organizations that have relevance in formulating strategy for GALVmed South Asia are presented in ‘Annex six ‘Lessons learnt that have relevance in formulating strategy for GALVmed South Asia’, page 32

⁵ Referring to the study mentioned under footnote 2, regarding one State (Madhya Pradesh (MP)) it was found that the animal husbandry services are very weak; in villages relatively close to the district headquarters; people go to private veterinary doctors or use indigenous treatments. Other villages surveyed in MP are not visited by government veterinary doctors. In Andhra Pradesh (AP), services are better but are more accessible to rich people than to the poor. Having to pay expenses to veterinary doctors is commonplace.

⁶ Annex one: GALVmed South Asia – MATRIX as part of Strategic Plan 2012 – 2017, page 25

4 Vision and Mission statements

The overall **VISION of GALVmed**⁷ reads:

To play a major role in poverty reduction and livelihood enhancement through livestock intervention by 2015, in support of the Millennium Development Goals.

MISSION (2012 revised version)

- To make an impactful and sustainable difference in the access to veterinary medicines by poor livestock keepers in Developing Countries
- To develop, register and launch four to six vaccines, pharmaceutical or diagnostic products by 2015 that meet the needs of poor livestock keepers
- To work with partner agencies in developing countries to ensure sustainable delivery of these new products to poor livestock keepers
- To provide and promote a successful model of global public-private partnership with increasing regional leadership that will ensure a pipeline of new products beyond 2015

The strapline **‘Protecting Livestock, Saving Human Life’** says it all in a nutshell.

The **values of GALVmed** presented below are at the basis of all its operations and would be widely used inside the organization; i.e. management actions, staff behaviour and partnerships are guided by these values.



Mind Map 1: Values of GALVmed

At the South Asia level, a Regional Advisory Committee (SARAC) was established comprising professionals and experts in the field of livestock and livelihoods, research and development, NGOs. etc.

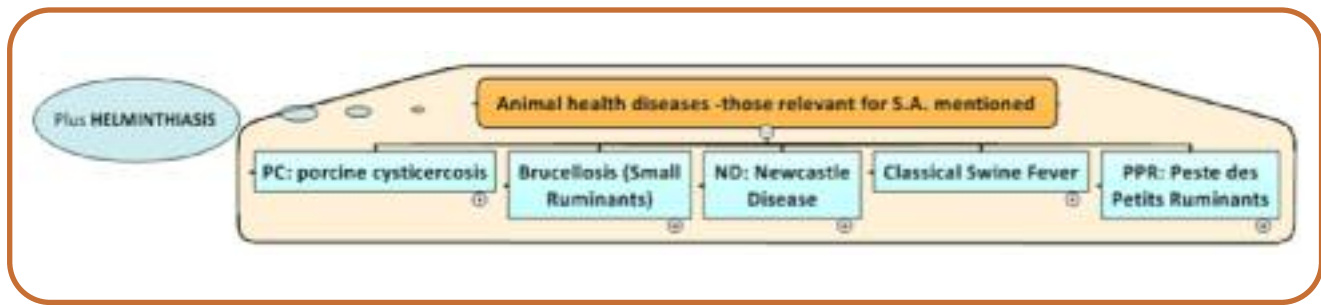
They met for the first time in December 2010 and contemplated potential areas of work for GALVmed South Asia.

Some of their recommendations were as follows⁸:

- In all countries there are issues relating to poor farmers’ access to vaccines diagnostics and medicines, and targeted interventions working in accordance with government policy are critical to ensure success;
- PPR, ND, HS (Haemorrhagic Septicaemia) and helminthiasis are shared issues of concern across all countries for poor farmers;
- SAARC is a critical point of coordination for the region as a whole;
- Holistic approaches are important. Vaccine campaigns alone will not succeed and they need to be combined with awareness and extension programmes, ideally through local partners;
- The private sector is an important partner as a point of access for poor farmers for distribution of vaccines diagnostics and medicines;
- Farmers are willing to pay for vaccines that deliver value for them. There are exceptions where farmers are initially too poor to afford vaccines, and subsidy programmes can stimulate market growth;
- Good liaison with governments at all levels is essential, but better approached through on-the-ground representative partnerships with local organisations that have closer and more sustainable relationships with them.

⁷ Regarding vision and mission statement, refer the revised version of 2012.

⁸ Reference: Regional Advisory Committee Workshop Proceedings, December 2010, New Delhi.



Mind Map 2.: Animal health diseases affected poor livestock keepers in SA most

Based on the *Disease Matrix (Annex two)* developed scientifically by GALVmed, inputs received from SARAC and discussions with other actors active in the development and/or livestock sector, it was concluded that of the range of animal health diseases GALVmed covers, five are most relevant for poor female/male livestock keepers in South Asia. These are listed below in order of their importance:

1 ND: Newcastle Disease

A viral disease of birds, mainly chicken, with a wide range of clinical signs from mild to severe, highly prevalent in backyard poultry in developing countries, where it causes high mortalities in unvaccinated chickens.

Next to ND, **fowl pox** appeared as another main disease of concern in the backyard poultry system.

2 PPR: peste des petits ruminants

Peste des petits ruminants (PPR) is a highly contagious viral disease of sheep and goats, resulting in heavy losses, especially in goats. Initially confined to West Africa, PPR has been spreading across the African continent, as well as to the Middle East and South Asia.

3 PC: porcine cysticercosis

With a worldwide spread, porcine cysticercosis is a parasitic zoonosis caused by infestation with the cestode *Taenia solium*, for which the pig is an intermediate host, while man is the final host.

4 Brucellosis (small ruminants)

Brucellosis is an infectious disease of humans and animals caused by contact with different species of bacteria called *Brucella*. These bacteria infect cattle, goats, sheep, camels, pigs, yaks and buffaloes. Humans can be easily infected through contact with birth fluids, placenta or foetus of infected animals, or by eating or drinking unpasteurized milk or cheese. Brucellosis is still an uncontrolled serious public health problem in many developing countries, including India (Basapa G. Mantur, 2008).

5 Classical Swine Fever

Also known as hog cholera, classical swine fever is a highly contagious and economically significant viral disease of pigs, with varying severity, depending on the type of virus and factors such as age or immune status of the pigs. Acute forms result in high mortality rates.

In addition, helminthiasis (internal parasites), a condition causing lower productivity and severe losses to livestock keepers, has been prioritised for South Asia by SARAC.



5 Overview of South Asia

It is stated that when the **inclusive growth** is materialised in the agriculture sector of South Asia, it would imply increased food and nutritional security and reduction of poverty (World Bank, 2010).

5.1 Introduction: poverty and South Asia

As is shown in *Annex seven: Overview of country boundaries and farming systems in South Asia*, South Asia is home to many agro-ecological zones, from heavy rainforest vegetation with biannual rainfall to relatively sparse, dry and arid vegetation with low unimodal rainfall. The high diversity implies that there are no universal solutions to agri-problems, but interventions need to be tailored to particular conditions; agro-ecological zone; the socio-economics of rural households (HHs); and the socio-cultural aspects of rural HHs (gender, religion, caste and class).

The South Asia region houses approximately 22% of the world human and 16% of world animal population (excluding poultry). It also has the largest concentration of the poor. Based on an international poverty line of \$1 a day per capita at 1985 prices, the World Bank estimates that **40% of the world's one billion poor are in this region**. Although the incidence of poverty has declined in recent years, the decline has not been sufficient to lead to a dramatic reduction in the absolute number of poor (*Diagram 2*). The projections are that if current trends continue, South Asia will see a more rapid reduction of poverty than in the past, but will still account for more than **one third of global absolute poor**.

Within the region, there are marked similarities in the structures, socio-political institutions, as well as economic, social and governance systems.

All the countries fall in the low-income category, with per capita income ranging from less than US\$250 in Nepal to US\$850 in Sri Lanka. In purchasing power parity terms, the income ranges from \$1,470 in Nepal to \$4,000 in Sri Lanka (Kumar, 2005).

According to Jean Dreze (Jean Dreze, 2011), the progress of living standards for common people, as opposed to a favoured minority, has been dreadfully slow – so slow that India's social indicators are still abysmal. *Annex five: South Asia – selected poverty related indicators*, page 30, presents the fact that India has started falling behind every other South Asian country (with the partial exception of Pakistan) in terms of social indicators, even as it is doing so well in terms of per capita income. Regarding gender disparity, all countries in South Asia score poorly; visit *Annex 8 Table 3: Key gender indicators by country for 2000, 2004 and the most recent year available with aggregations for income level*, page 35. In its report *'World Development Report 2012: Gender Equality and Development* (World, 2012) the World Bank argues that closing these persistent gender gaps matters. It matters because gender equality is a core development objective in its own right. But it is also **smart economics**. Greater gender equality can enhance productivity, improve development outcomes for the next generation and make institutions more representative.

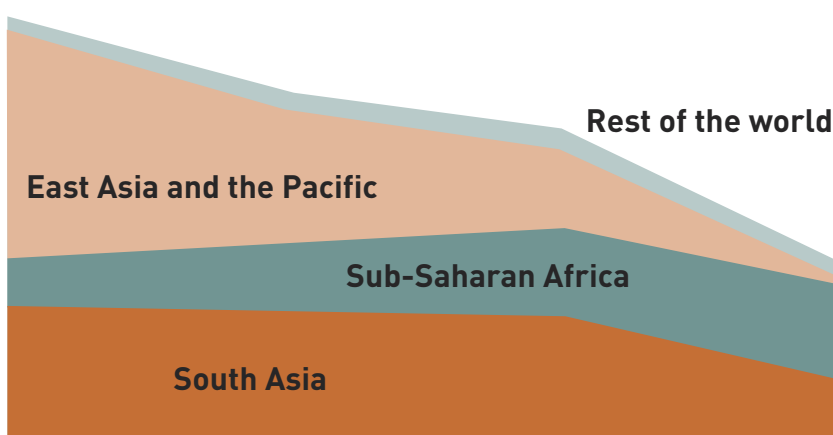


Diagram 2.: Progress in Poverty Reduction: Trends and Projections

5.2 Importance of livestock for the poor in South Asia⁹

Poverty in South Asia is primarily rural – over 80% of all poor are in rural areas and directly and indirectly depend on agriculture for their livelihood. Within agriculture, livestock has the potential of supporting and improving many more livelihoods than any other sector. That is because the **distribution of livestock in the region is far more equitable than that of land**¹⁰.

Livestock thus plays an important role in the rural economy by supplementing family incomes and generating gainful employment in the rural sector, particularly among the landless labourers, small and marginal farmers and women. The importance of livestock¹¹ in the region goes beyond the function of food production. It is an important source of draught power, manure for crop production and fuel for domestic use.

Regional consumption patterns are heavily influenced by religious considerations. Average meat consumption continues to be low, due to the preference of the Hindu population for vegetarianism. At the same time, religious considerations exclude pork from the diets of Muslims (nearly 30% of South Asian population). Less than 20% of per-capita protein consumption in the region is animal based compared to 37% in the world. Nevertheless, increases in income have and continue to influence the dietary patterns, with the share of livestock products increasing steadily¹².

The growth in the livestock subsector is expected to contribute to poverty reduction, as the livestock elements are largely concentrated among the marginal and small farmers in rural areas. This is especially true in South Asia in the cases of small ruminants and poultry birds. While 60% of the world's goat population resides in Asia, India accounts for 20% of this, with an annual growth rate of 1.6% , in spite of a 38% annual slaughter rate and approximately 15% mortality. Overall, India has 9.8% (182 million) of the total small ruminants of the world, comprised of 61 million sheep and 121 million of goats. Goat population in Bhutan is 31,328 heads.

In Bangladesh, the small ruminant population is around 38,094 with 4.9% annual growth, the highest among all livestock.

Pigs are reared by tribals, dalits and marginalised households in rural as well as in peri-urban areas. It is estimated that 25% of the pig population in the country is in the Northeast, 80% of indigenous families keep a few pigs (generally two to three) and that the region consumes 50% of the country's pork, according to Indian Council of Agricultural Research.

The small ruminants, backyard poultry and pig sector will therefore, play a significant role in the coming decades in impacting on the livelihoods of the small marginal and dalit farmers rearing them.

Poor infrastructural facilities and inadequate health services lead to heavy economic losses for female/male farmers and herders due to high mortality (FAO, 2011). Therefore, any intervention that addresses this gap would improve the livelihoods of the poor on the one hand and increase food and nutritional security on the other. *Annex four: PPR disease incidence and estimated economic loss*, page 29, provides an overview of the incidence of the most common disease among small ruminants, namely PPR; the costs of this disease if not controlled and the potential gains when controlled are tremendous; losses come to **3 billion US\$ per annum for South Asia**. Indications suggest that effective and efficient control of **Newcastle Disease (ND)** can easily reduce the flock mortality from 30% to 20% in the traditional and from 12% to 6% in the smallholder commercial poultry production sector, the gains amounting to **182 million US\$ per annum** (Sagari R. Ramdas, 2009). Regarding **porcine cysticercosis** (Rajshekhar, 2010), there are an estimated 1 million Indians with active epilepsy, half of which is attributable to Neurocysticercosis (NCC). In Nepal, 7.3 per 1000 head of people suffer epilepsy, and almost 50% of this is attributable to NCC; i.e. over 100,000 people with NCC.

A summary of the context is presented in Annex one: GALVmed South Asia – MATRIX as part of Strategic Plan 2012 – 2017, page 25.

⁹ Regarding livestock data used in this chapter, the references are FAO STAT and websites of respective Ministry of Agriculture. In addition, the following (FAO, 2011).references were consulted: (ILRI, 2007), (Kumar, 2005), (Rushton, 2007), (Upton, 2008), (Leyland, 2011),

¹⁰ For example, in India, more than 55% of cows and buffaloes and more than 60% of sheep are on the farms of less than two hectares. Similarly in Bangladesh, 58% of cows, 68% of sheep and goats and 6 % of poultry birds are on farms below one hectare and provide significant proportion of livelihoods.

¹¹ It should however be acknowledged that poor South Asian households primarily keep livestock as a buffer to deal with domestic emergencies and other urgencies (drought period, for instance). It also forms important collateral for private money lenders, while livestock wealth is taken into account when borrowing from them. It is therefore important to acknowledge that poor livestock keepers are livelihood oriented and not yet market oriented.

¹² The region is expected to register sustained and significant increase in the demand for livestock products. Translating this expansion into sustained opportunities for millions of livestock-dependent poor would be an important challenge for the development and business community.

5.3 Gender and social dimensions to livestock keeping in South Asia

At various points in the above-mentioned chapter, gender has been given attention, as the livestock sector remains in many ways male oriented and dominated.

Relevant basic **gender** facts¹³ are given below:

- There are complex gender and intra-household dynamics around increased incomes, decision making and food allocation and consumption patterns.
- Gender disparities in food allocation and in nutritional status have especially been found in South Asia, where food allocation is skewed in favour of men and boys.
- Numerous studies on commercialisation have shown that increases in cash income do not necessarily translate into gains for all household members.
- Women with control over resources tend to have a large say in how the household allocates resources, and women are typically more likely to skew resources towards nutrition.
- Women’s control of income is a key promoter of household food security and nutrition.
- An approach to livestock value chain development that leverages on value chain interventions that avoid the transferring of income and income control from women to men, and that generate positive gender outcomes, can contribute to meeting the goals of nutrition.

- A major contribution of focusing attention and action on empowering women through livestock can be made by spreading powerful images of women who use livestock to meet family and community needs and to address their strategic interest¹⁴.

5.4 The value chain of poor female/male livestock producers in South Asia

Diagram 3 below presents a typical supply flow for livestock products in lower-income countries such as those in South Asia; poor consumers get most of their animal source food (asf) from lower-value domestic markets where poor livestock keepers sell their products (beyond what is consumed directly on-farm).

As indicated in Diagram 3, a core cause of poor livestock producers not able to reach beyond the domestic / local markets is related to the animal health services namely technologies for disease control and cure that might be available, but delivery problems remain.

The **supply chain** *Diagram 1: The last mile of the livestock service delivery*, page 8, attempts to show that investments are needed at both the supply and the demand side in order to address the ‘last mile’ of the delivery system, namely reaching those who are currently not reached.

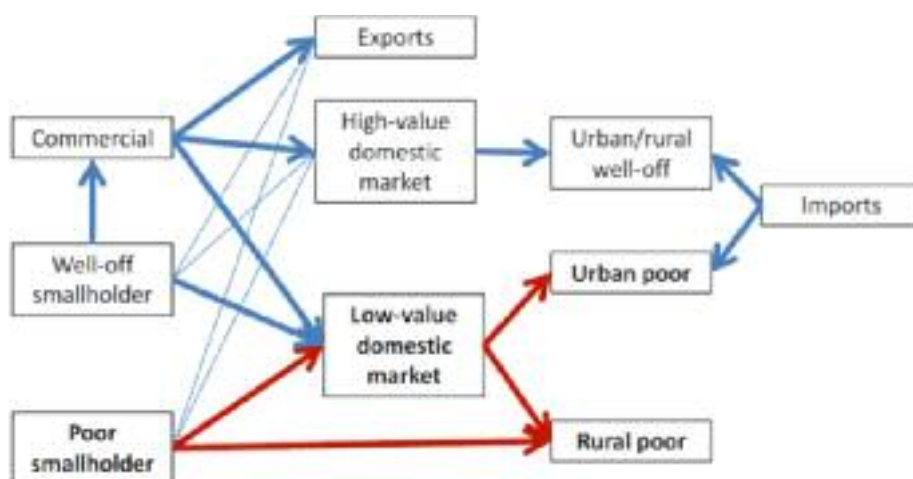
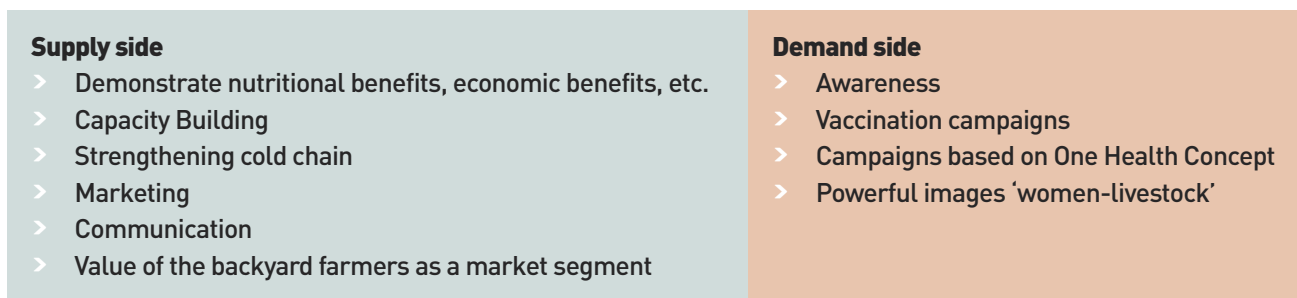


Diagram 3:
Common value chain of poor smallholders

¹³ See also the gender disparity indicators presented in *Annex eight: Key gender indicators by country for 2000, 2004 and the most recent year available with aggregations for income level*, page 35.

¹⁴ Reference: (A. Waters-Bayer, 2010)

6 Current GALVmed initiatives in South Asia



GALVmed South Asia is still in the nascent stage, as the South Asia office (based in New Delhi – India) began functioning from April 2010 onwards. In a relatively short time, various activities were initiated and partnerships formed. These are presented below, along with the three animal diseases that received most of the attention.

6.1 On-going activities of GALVmed in South Asia

1 Newcastle Disease (ND)

Pilot Projects: 'field testing of improved delivery of ND vaccine at household level'

One of the first priorities set was developing disease control tools relevant for ND. First, the value chain was studied: the gaps in the entire chain from vaccine production to delivery into the bird. Although in the case of India, where ND vaccines are produced by both private and public units, packaged in smaller doses (100 doses) and sold in pharmaceutical shops based in rural areas, market studies (Meeta Punjabi, 2011) have been conducted to fully understand the

weaknesses in the chain as well as to identify the geographical area for the intervention. The study concluded that the gap is mainly at the end of the chain namely '**delivery at household level**' due to poor access to services and lack of awareness.

To work on improved delivery at household level, two pilot projects (Professional Assistance for development Action (PRADAN) and Bhodal Milk Producers' Cooperative Society (BMPCS)) were rolled out through partnering agencies respectively in Keonjhar and Mayurbhani districts¹⁵, Orissa State, India and one ND control pilot project in Jhapa, Nepal, led by Heifer International Nepal (HI-Nepal). Besides ND vaccination and deworming, the Community Animal Health Workers (CAHWs) are also imparting knowledge on good husbandry practices in backyard poultry and small ruminants. The awareness created through ND vaccination has resulted in demand by farmers for fowl pox vaccination; i.e. expenses of which would be borne by the farmers themselves.

¹⁵ As per census of 2001, the maximum Backyard Poultry (2,083,124) and goat population (6,015,871) are found in Mayurbhani district.

Other ND-related activities

These include commercial production of thermo-stable ND vaccine, including D-58 strain and pellet vaccine. This will be achieved through working with different partners and bringing in various enabling methodologies. Regarding **freeze-dried vaccine**, some good progress has been made by Hester Biosciences in making thermo-stable Lasota ND vaccine, while for the **pellet vaccine** an agreement was signed with TANUVAS and the work began from Nov 10 2010, onwards. Formulation attempts and field evaluation are being conducted.

2 Porcine cysticercosis (PC)

Oxfendazole (an anthelmintic) has been successfully used for the control of pig cysticercosis, but has not been registered for that use. GALVmed is generating the necessary data to register the use of Oxfendazole for the treatment of cysticercosis in pigs, and is facilitating its production. An agreement is in place with the private firm 'Intellevet' for the market studies and registration flow for Oxfendazole in South Asia. The fieldwork has been completed and a report is expected in January 2012. Regarding **vaccine development**, Indian Immunologicals Ltd. (IIL) has reported good progress on the development of a process for the large scale commercial production of the TSOL18 vaccine which was first developed by University of Melbourne; the vaccine has now been produced in a new expression system, and registration trials are on-going. TSOL18 vaccine for use in pigs is critical for the control and prevention of porcine cysticercosis caused by *Taenia solium*. Both vaccine and medication are needed for the effective control of cysticercosis, as the vaccine has no effect on the cysts already present in pigs at the time of vaccination.

3 Peste des petits ruminants (PPR)

Consultants have been contracted to carry out the PPR vaccine constraints baseline study in South Asia. The draft report was received and commented upon, and the final report is expected in early 2012. As indicated in the report¹⁶ the annual losses due to PPR are estimated at 3 billion US dollars per annum;

India takes the largest share (about 87 %), followed by Bangladesh (about 10%) and next Nepal (about 4 %). Although the small ruminant populations are relatively small in Sri Lanka and Bhutan, the losses per annum are still around 4.5 and 5 million US dollars respectively.

6.2 Target population (direct & indirect)

For GALVmed South Asia, the target population (intended audience / ultimate beneficiaries) can be described as follows:

Poor female/male smallholder and landless agricultural workers rearing or interested in keeping small animal(s) i.e. small ruminants, pigs and poultry. More specifically, it concerns:

- > those living below the poverty line (\leq 2 US dollar per day);
- > those belonging to disadvantaged communities;
- > those usually in isolated geographical areas (Central, Eastern and North Eastern part of India), (Mountain Areas of Nepal and North Eastern India, etc.);
- > and those who are more often than not female livestock rearers.

In order to reach out to this audience, a range of institutions will be involved in and therefore affected by interventions initiated/facilitated by GALVmed. These institutions can be divided into three categories, namely:

- > **Public sector:** Local, State, regional (inter-state) and national Governments and international organizations;
- > **Private sector:** local (commercial vaccine producers, vendors, agri shops, dealers and self employed professionals), national, regional and global firms / companies;
- > **Civil society:** Non-Governmental organisations, producer/user/self-help groups, religious institutions, advocacy groups, community-based organisations, cooperatives, etc.

¹⁶ For details, consult Annex four: PPR disease incidence and estimated economic loss, page 29

7 GALVmed's Strategy for South Asia

7.1 Introduction

The strategy has been developed using the so-called Temporal Logic Model¹⁷. It is about applying clear, logical thought when seeking to tackle the complex and ever-changing challenges of poverty and need. In other words, it is about sensible planning. Without going into details, it is authoritative to differentiate **'context aspects'** from **'design aspects'** of the strategy, as depicted in the diagram below.

Context Aspects	Context	Target Population	Goals	Assumptions	
	It states: <i>"if these are the issues for the population, then we hope to create this change based on these premises"</i>				
Design Aspects	Objectives	Input/ Resources	Sustainable Strategies	Outcomes	Indicators
	It states: <i>"if this is what we want to realistically accomplish, and these are our resources to carry out these activities, and we will ensure long-term results with these strategies, then we will have this effect, which will be illustrated through these variables"</i>				

Diagram 4: Outline of Temporal Logic Model (planning instrument used)

The **contextual aspect** provides the background for the strategy. It includes context, target population, goals and assumptions and is intended to convey the information necessary to understand the context aspects of the strategy. Context aspects remain **unchanged**, thus providing the overall trajectory and stability to the strategy.

The **design aspect** includes objectives, inputs/ resources, activities, indicators, outcomes and impacts. Depending on the experiences made and the opportunities arising, the design aspect can be adjusted and thus changed.

The Temporal Logic Model of the GALVmed South Asia Strategy is presented in Annex one, page 25, while hereafter the context and design aspects are presented in more detail; i.e., the context and target population have already been handled previously in Chapter 6, page 11 and Chapter 7, page 15.

7.2 GALVmed's Goals for South Asia

Along with the vision and mission statement of GALVmed, the eight goals, presented below, have been spelled out for South Asia. Kindly observe that several goals are interrelated:

- a** Advantages of the **technological** and **innovation capacity** present in the region used in order to **develop animal health tools** that would address the needs of poor female/male livestock keepers within South Asia and beyond (e.g. Sub-Saharan Africa);
- b** **Effective partnerships** (within and beyond the region e.g. South-South) aiming at developing **solutions** (vaccines, medicines, diagnostics) for non-mainstream products and neglected diseases, as well as technologies that will allow their development and production at low cost, **established** and **functional**;
- c** Specific **gaps** in **animal health access** and **service delivery** regarding **small animals** identified and studied;
- d** **Sustainable delivery models** that ensure affordable access to animal health and husbandry services, tools and products by poor female/male livestock keepers developed (new) or improved (existing);
- e** **One-Health approach** (from grass root perspective) successfully tested and lessons learnt promoted;

¹⁷ For the interested reader, this site <http://mande.co.uk/?s=logframe+planning> provides plenty of information on different forms of planning whether concerning public, private and/or civil society.

- f** Through promoting **innovation** and **new/unconventional access strategies**, private actors enabled to grasp business opportunities involving poor female/male livestock keepers;
- g** Poor female/male livestock keepers **empowered, capacitated** and **organised**; able to access livestock services, inputs and market their products partially;
- h** **Small animals** are kept as an integral part of the prevailing farming systems, and contribute to ecological sustainability,

The goals can be achieved when the below-mentioned assumptions (preconditions) are fulfilled. These assumptions are all-important for the success of the activities planned, but lie outside its scope and are actually answers to the question: ‘what external factors are not influenced by the activities, but may affect its implementation and long-term sustainability?’. However, this does not mean that if a precondition is not met, activities cannot take place at all.

Assumptions (preconditions):

1 Political stability within the participating countries.

The reason, for instance, that Pakistan and Afghanistan are not included in the current strategy meant for the period 2012–2017.

2 New actors join GALVmed South Asia ensuring long-term engagement.

It is important that more local and regional donors join, which might also include a private actor contributing in-kind, for instance.

3 Private actors willing to form partnerships and invest in GALVmed (global, South Asia).

Partnerships which go beyond pure contractual arrangements, but purposefully contributing to GALVmed’s strategy plan for South Asia, which also implies providing inputs for other regions where relevant and opportune.

4 Relevant private actors interested in developing inclusive business (CSR) / perceive the poor as potential business line.

The Confederation of Indian Industries (CII) is, for instance, an active player in promoting corporate social responsibility (CSR)¹⁸ among the business communities, while examples exist of business entities taking poor women as the clients¹⁹.

5 Women’s right to own and access productive resources are recognised.

Livestock extension, input delivery and financial services staff are usually dominated by men who are most likely to talk with male family members about, for example, how to improve feeding and housing. The women and girls who carry out the actual work receive the relevant information only indirectly, if at all (A. Waters-Bayer, 2010). Therefore, it is important to recognise their rights, namely to own and access productive resources; after all, ‘investing in women is smart economics’ as formerly stated by the World Bank, for instance²⁰.

6 As stakeholders learn more about the issues and changes in the environment, the activities can change within the given contextual aspects.

Business communities in South Asia are normally investing in marketing, but it might turn out that a specific marketing campaign is needed to reach out to the poorest. In such a case, the marketing activity might entail much more than what was foreseen. This assumption is also about users of this strategy realising that the design aspects can change, for instance through annual plans.

7 Sufficient capacity and willingness to operate at all levels in a gender-sensitive manner.

Many misconceptions and prejudices related to women in livestock keeping still prevail after so many years of gender sensitisation. It is obviously an uphill struggle to change the perceptions of many agri-related professionals about the contribution that women can make to livestock development and the contribution that livestock can make to enhance the economic and socio-political status of women (A. Waters-Bayer, 2010). In principle, however, GALVmed aims at mainstreaming gender²¹.

¹⁸ India’s remarkable economic growth in the past decade has created greater capacity for business to play its part in addressing the issues of poverty and exclusion that continue to be a major challenge within the country and the region. Many companies are accepting this challenge, developing business models designed to return a profit for the company whilst including the poor – as suppliers, employees, customers or clients – and reducing dependency on natural resources. Despite this flourish of innovation, many barriers remain to widening and deepening the reach of these ‘inclusive business models’ – barriers that company executives are often working alone to solve. Source: <http://www.businesscalltoaction.org/>; <http://www.iblf.org/in.aspx>

¹⁹ Visit website of Keggfarm and SA PPLPP respectively namely <http://www.keggfarms.com/index.html> and <http://saplpp.org/goodpractices/small-holder-poultry/SAGP01-Linking-Business-with-Pro-Poor-Development>

²⁰ For evidence visit website <http://www.cedpa.org/content/news/detail/2230> of CEDPA and <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGENDER/0,,menuPK:336874~pagePK:149018~piPK:149093~theSitePK:336868,00.html> of the World Bank.

²¹ Read for instance ‘Burst of creativity’ helps GALVmed develop its gender strategy” in the December 2011 Newsletter available at: <http://www.GALVmed.org/news-resources/newsletter>

8 Government departments are motivated to work as Partners with private actors and vice-versa.

Although public–private partnerships are definitely promoted in South Asia, and while there are also positive examples, one keeps encountering many conventional staff operating in the Government Institutions that are not in favour of such partnerships. The art is to identify the forwarding forces within the institutions that can assist in establishing such partnerships. In addition, several civil society groups are of the opinion that veterinary services should be free of costs.

9 SAARC countries forum is active and considers the role of livestock in development.

The South Asia Regional Advisory Committee has stressed, for instance, anticipating on the importance of SAARC cooperation modalities.

10 Conducive environment allowing livestock keepers to organise themselves as societies, producer organisations and associations countrywide.

In particular, good results in empowering women have been gained through encouraging women to organise themselves around production and/or processing of livestock products (A. Waters-Bayer, 2010). In this regard, the ‘women broiler cooperatives’²² promoted by PRADAN, forms an excellent example.

11 Inter-Ministerial and Inter-State cooperation and sharing of information is happening.

From GALVmed’s first experiences in conducting baseline studies, it is learnt that obtaining data from relevant government departments is not as straightforward as one would hope.

12 Apart from supporting development of large ruminants, Governments increase their attention towards small animals (pigs, poultry and small ruminants).

South Asia being traditionally milch-oriented, addressing small animals implies a complete change in mindset. Yet, the first policy examples²³ are in place.

The goals and related assumptions form the contextual aspects of the strategy, implying that they are **fixed** for the given period of 2012–2017. The design aspects of the strategy that are presented in the next section can, in principle, change depending on the circumstances. The seven objectives in the next section are all-important, but might not all be achieved

to the same degree. Anticipating on what works, it is possible that one objective is achieved above expectations whilst another one much less so.

7.3 GALVmed’s Objectives for South Asia

When the **objectives presented below are achieved**, several of the above-mentioned goals will be met, at least partially. However, first experiences might tell that a certain objective needs to be adjusted in order to better complement the others and jointly lead to meeting the goals. Also, certain opportunities might arise that deserve to be addressed, as this falls well within the overall goals and thus a new objective could be formulated; experiences tell that this can best be materialised through annual planning.

A certain objective and/or set of objectives are **not** related to one specific goal, but the various expected outcomes contribute to achieving the goals.

The **seven objectives** are:

- 1 Anticipating on the South Asian technological and innovation capacity; **mediate** so that GALVmed’s partners within and beyond South Asia have access to it;
- 2 Sustainable and quality **Newcastle Disease vaccines manufacturing and delivery system** in place, using thermo-stable vaccines;
- 3 **Service Delivery models** centred around poultry health, but also addressing all aspects of backyard poultry production, including access to markets in situ;
- 4 **Pilots** aiming at improving preventive and curative measures to control ND, PC, and PPR and scoping Brucellosis (SR), CSF and helminthiasis successfully conducted;
- 5 Within **Species Platform**, related disease forums/Communities of Practice (CoPs) (managing diseases, multi-disciplinary and learning approach) relevant for small animals, functional and able to influence relevant actors;
- 6 Development of **business, management and technical skills** of local manufacturers, distributors and retailers of GALVmed-linked products supported;
- 7 As per need and demand, **punctual interventions** related to assuring quality veterinary vaccines and medicines, as well as appropriate regulatory and quality control mechanism are made.

²² Resource: <http://saplpp.org/PhotoGallery/photo-slide-shows/SAGP03-home-based-broiler-farming-gp-prevalent-in-kesla-block/slide2of8>

²³ Visit <http://orissaahvs.com/common/proposed-policy.htm>

It is important to acknowledge that each objective covers gender equity implying, for instance, that a comprehensive quality ND delivery system will also contribute to gender equity and equality.

The activities planned and presented in chapter 8.5, page 20 should lead to achieving the overall objectives; initially considerable investments in establishing genuine partnerships including with private actors are needed, but if it is done well, lasting results can be expected. So far, the partnerships have been much donor–client oriented (I pay, he/she does), partly due to time constraints, and not towards equality and of mutual benefits. Well-developed partnerships can contribute tremendously to up-scaling successful livestock delivery models.

Investing in the establishment of disease forums might be innovative for the South Asia setting; facilitating active interactions among professional actors who are interested to learn and share regarding a particular animal health problem. It might well be a forum where private actors are willing to sit next to civil society and public actors all engaged in how best to reduce losses due to PPR, for instance.

Advances made in **Traditional Knowledge systems are recognized** and ethno veterinary medicine included in GALVmed activities where necessary.

7.4 Mode of Operating: sustainable strategies

First and foremost, the values of GALVmed will be respected and adhered to in all endeavours of GALVmed South Asia.

Sustainable strategies are needed to achieve the objectives (short term) and goals (longer term) and these are as follows:

- 1 The focus will be on **development of markets** through innovative and unconventional initiatives, by considering importance of both formal and informal markets, and considering supply and demand sides.

The studies conducted by GALVmed SA in Phase 1, for instance, have revealed the many challenges that the female/male livestock owners face when trying to access animal health products and services. It is GALVmed's aim to improve the accessibility of these through building the capacity of the selected partners

and also assist them in developing the markets. These will be achieved through conventional and unconventional initiatives, from the supply and demand sides, some of which will include working with relevant authorities, institutions and private companies to increase their capacity to stand alone and operate to meet the needs of their country and regions. This may be through investment in materials or through support via partners to improve skills levels. It may also be by brokering agreements that lead to product improvements or to longer-term generic partnerships of mutual interest.

This strategy, however, also emphasizes that whatever activities are undertaken, a commercial orientation should be followed. At times, this might be very demanding, especially when working with the civil societies as well as government institutions; many perceive 'animal disease control' as a public good only.

- 2 **Aligning and synergising** with other programmes and institutions to ensure maximum learning and outreach; while it forms the basis for the **disease forums** and related **CoPs**, a range of activities can be delivered through them. In many ways, it can be the key entity to care for the management of knowledge, experiences and lessons learnt.
- 3 GALVmed SA is in principle the **facilitator** and, where opportune, the know-how provider; it acts as broker, facilitator, coach and knowledge provider. Thus, no dependency is created. In many cases, GALVmed is the one providing the funds and thus easily perceived as a donor agency. It is therefore important to focus from the onset on partnerships which are of mutual interest, otherwise it will just be a 'donor-recipient' or 'entrepreneur-client' relationship.
- 4 **One-Health approach** enables the poor to simultaneously address human and animal health issues; e.g. PC is easier to address when human health is considered in equal terms.

This approach is also largely one of attitudinal changes: coordination; collaboration and communication between human health and animal health sectors for joint planning; investigation and control of zoonotic and diseases/problems of common interest.

Box 2 Agriculture innovation system approach (AIS)

Recognition and understanding of factors that lead to successful adoption of feed and other agricultural technologies is constantly growing. The 'Agricultural Innovation Systems' (AIS) approach, advocated by a number of agricultural development agencies, particularly the World Bank, is the result of lessons learnt from National Agricultural Research System and Agricultural Knowledge Information System approaches of the 1980s and 90s. Essentially AIS is designed to make better use of new knowledge and design interventions that successfully build on research investments.

The AIS approach has the following characteristics:

- It emphasizes development outcomes and growth arising from technology and knowledge generation and adoption rather than the strengthening of research systems and their outputs.
- Draws attention to the totality of actors and factors needed for innovation and growth. The AIS approach is a less science driven process.
- Emphasizes innovations deriving from an interactive, dynamic process that relies on collective action and multiple knowledge sources.
- Emphasizes the importance of interactions within a sector – is more inclusive and leverages the resources of different actors, e.g., the private sector role is more prominent, and civil society and farmer's associations play an important role in facilitating collective action.
- Consolidates the role of the private sector and agribusiness – value chains are particularly important in the context of AIS.
- Brings to the fore the need to build the innovative capacity of the diverse actors, including agricultural education in a coordinated manner.
- Is context specific and allows identification of opportunities and binding constraints and thereby develops more tailor made, incremental support and investments that respond to the development phase of the country, region or sector.

Source: (Leyland, 2011)

5 As much as possible, the **agriculture innovation system approach (AIS)** will be used to strengthen value chain for poor livestock producers, in particular the 'the inputs & services' and 'production'. Key aspects of the AIS approach are presented in *Box 2: Agriculture innovation system approach (AIS)*, above.

6 Use of appropriate and innovative communication methods and means to understand the needs and demands of the clients, disseminate information, share experiences, promote successes, etc.

7.5 Planned Activities and Expected Outputs

In terms of activities, the following set has been planned, but these can be adjusted when needed; namely anticipating on experiences made and lessons learnt, and when funds are available.

- 1 ND pilots** to be initiated in new areas and pilots taken up for PPR and PC;
- 2** Identifying a commercial producer for **thermo-stable vaccine** and support such in production and marketing of the vaccine;

- 3 **Continue** and **expand** current ND pilot, but with thermo-stable vaccine where possible;
 - 4 Facilitate the registration, commercial production and marketing of TSOL18 vaccine and **Oxfendazole for pigs** in the region;
 - 5 Organising **advocacy** and media interventions to build case around **zoonotic diseases** (PC, Brucellosis, etc.) and supported by vaccine production,
 - 6 Initial scoping/feasibility study for a **DIVA vaccine for Brucellosis in small ruminants**;
 - 7 Based on the disease forums within **Species Platform**, and making use of related CoP, organising **knowledge-sharing activities** with all partners, respective State AH depts., other NGOs and vaccine producers, including synergizing with like-minded institutions such as National Ministries, research entities, FAO, IFAD, ILRI SA, SA PPLPP, WHO and policy makers.
 - 8 As per need, organising **gender sensitisation activities** with all relevant stake holders ,thus ensuring mainstreaming of gender;
 - 9 As per need and demand, invest in **business, management, marketing and technical skills** of manufacturers, local distributors and retailers of GALVmed-linked products;
 - 10 Identification of **gaps in policy, regulatory framework and veterinary legislations** and developing action plan to address these;
 - 11 Developing **inputs for extensive use of media** to highlight issues around livestock diseases and, in particular, **zoonoses** impacting livestock and human health and the livelihoods of poor;
- 4 Disease Platforms functional, and at least four related CoPs;
 - 5 At least one site with a successful One-Health approach;
 - 6 Weaknesses in relevant policies, regulatory frameworks, and veterinary legislations identified and first policy facilitation work successful.

Due to the reduction of disease incidences and improved husbandry practices, it is estimated that considerable financial gains can accrue. However, the highest gains would be achieved through the established sustainable delivery models.

7.6 Monitoring and Evaluation along set indicators

Most of the above-mentioned outputs are tangible and can be measured; i.e., 1–3 are straightforward namely is a certain product available in the market; 4–6 can be partially assessed by regular reporting, complemented with simple self-evaluations by forum members and their related CoPs at regular intervals.

However, they would not reveal whether the actual objectives have been achieved and whether these achievements will lead to fulfilling the set goals. Namely, it is necessary to go beyond the observation of facts and explain why the changes noted took place and how far they can be attributes to the intervention being analysed. Therefore, it is important to develop a monitoring and evaluation system that provides data and insights along a set of indicators²⁴ presented below.

Set of Indicators²⁵ at least measureable for Pilot Projects:

- 1 **Enhanced capacity** among participating actors to deliver, to reach out, to sell:
 - > number of HHs aware of the diseases (ND, PPR);
 - > percentage and no. of livestock vaccinated;
 - > increase in the no. of vaccine doses sold;
 - > activities of the disease forums;
 - > changes in policies and strategies of the government;
 - > changes in policies and strategies of private actors;
 - > others.

It is expected that the above-mentioned activities, if and when implemented successfully, will at least lead to the following outputs:

- 1 Thermo stable ND vaccine in the SA market;
- 2 Effective PC de-wormer in the SA market;
- 3 Quality and appropriate vaccines for PPR, ND and PC, in the SA market;

²⁴ It is important to note that these indicators can be measured regarding the pilot areas. Going beyond the pilot areas will only be relevant over a longer period of time when there are clear indications that the pilot interventions have been up-scaled, approaches disseminated are adopted at large, products promoted have high turn-over, etc.

²⁵ As indicated in the TLM, 'Annex one: GALVmed South Asia – MATRIX as part of Strategic Plan 2012 - 2017', page 25, gender disaggregation is needed when using the indicators namely one should consider female/male elders (FE, ME), female/male adults (FA, MA) and female/male children (FC, MC).

- 2 Improved access** to services and inputs:
 - > reduced gender disparity;
 - > number of the functional CAHWs in the pilot projects;
 - > number of formally recognised CAHWs (veterinary legislation);
 - > business entity taking up business line relevant for the poor;
 - > other.
- 3 Increased uptake** of appropriate and effective animal health and husbandry practices in the pilot areas:
 - > improved livestock feeding from local resources;
 - > appropriate protection and housing of livestock;
 - > preventive animal health measures (e.g. de-worming etc);
 - > others.
- 4 Incidence of diseases** among small animals **reduced** with at least 20% in pilot areas.
- 5 Increased productivity** and production of keeping small animals, reflected by productivity parameters (weight gain, hatchability rate, flock size, weight at birth, etc.)
- 6 Improved food and nutritional security** and income gains.
- 7** Accumulation of, access to and control over **livelihood assets**.
- 8** Number of issues successfully handled through **Species Platform**.
- 9** Improved, enabling **policy environment** (access to services and markets for poor livestock keepers, scope for business actors to reach out to clients who are poor).
- 10 Business turnover** (medicine, vaccines related to ND, PPR, PC) increased significantly (in the project areas).

7.7 Human and other resources needed

Although the above-mentioned sustainable strategies (approaches) clearly indicate that GALVmed will play the role of broker, facilitator, catalyst and knowledge provider, basic **human resource capacity** should be in place, namely:

- i** Advanced veterinary science;
- ii** Agriculture Innovation Systems approach (covering issues as marketing and commercialisation, participatory extension methods, etc.);
- iii** One-Health approach;
- iv** Monitoring and Evaluation (processes, effects, impact);
- v** Business and marketing skills;
- vi** Facilitation and moderation skills;
- vii** Gender mainstreaming;
- viii** Gender sensitive budgeting;
- ix** Inclusive business; and
- x** Finance and Administration.

In other words, a lean office with good communication facilities, a pro-active Regional Advisory Committee and a network of associated professionals committed to GALVmed's vision, mission and values would function well. The funds needed to ensure smooth implementation of the above-mentioned GALVmed's Strategy for South Asia would be sourced from GALVmed's traditional donors and other sources.



8 References

- A. Waters-Bayer, B. L. (2010). Promoting Gender Equality and Empowering women through Livestock. In A. S. Frans Swanepoel, *The Role of Livestock in Developing Communities: Enhancing Multifunctionality* (Vol. <http://mahider.ilri.org/bitstream/handle/10568/3003/roleLivestockFarming.pdf?sequence=1>). Bloemfontein: Sun MeDIA, The Technical Centre for Agriculture and Rural Cooperation (CTA).
- Ahuja Vinod, D. M. (2008). *Poultry Based Livelihoods of Rural Poor: Case of Kuroiler in West Bengal, Document 012, Research Report, South Asia Pro-poor Livestock Policy Initiative, April, 2008*. New Delhi, India: SA PPLPP (FAO-NDDDB).
- Ajay Mathur, R. K. (2011). *Training & Extension Activities of Spin Ghar Poultry Farmers Association (SPFA); a success story*. Jalalabad, Afghanistan: Spin Ghar Poultry Farmers Association.
- Basapa G. Mantur, S. K. (2008, November, 539-547). *Brucellosis in India – a review*. J. Biosci (<http://www.ias.ac.in/jbiosci>) (Indian Academy of Sciences) 33 (4) .
- C.K. Rao. (2011 (1st draft version)). *PPR vaccine constraints – Baseline Survey South Asia – Hyderabad, India: GALVmed*.
- DFID. (2011). Summary of DFID's Regional work in Asia 2011–2015. New Delhi: DFID.
- FAO. (2011). *World Livestock 2011: Livestock in food security*. Rome, Italy: FAO.
- FAO, O. W. (2008). *Contributing to One World, One Health: A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystem interface*. (Consultation Document). New Delhi: UN System Influenza Coordination. Available at: <http://un-influenza.org/node/2341/>.
- Gongal, G. (2011). *One Health Approach for Emerging Zoonoses: Principle to Practice*. Melbourne: WHO (Proceedings 1st International One Health Congress).
- Haddad L., Z. S. (2009). *Lifting the Curse: Overcoming Persistent Undernutrition in India*. www.ids.ac.uk/go/idspublication/lifting-the-curse-overcoming-persistent-undernutrition-in-india (July 2009).
- Haddad, L. (August 27, 2011). *Transforming child nutrition*. The HINDU.
- Hardie, K. (2011). *Animal Health Experts Call for Balanced Regulation to ensure availability of veterinary medicines*. Press Release . London: IFAH (www.ifahsec.org).
- ILRI. (2007). *Livestock Asia: A Strategy and Action Plan for research for poverty reduction*. New Delhi: International Livestock Research Institute (ILRI).
- *Impetus Strategy Paper* highlights ways to improve livestock development in Africa. GALVmed (<http://www.GALVmed.org/node/190>).
- Jean Dreze, A. S. (2011). *Putting Growth in its Place, It has to be but a means to development, not and end in itself*. Magazine Outlook (<http://www.outlookindia.com/article.aspx?278843>).
- Kumar, P. (2005). Kumar, Praduman (2005). *Empowering the Small Farmers towards a Food Secure India, in India's Agricultural Challenges, Reflections on Policy, Technology and other Issues*., New Delhi: Centad.
- Leyland, T. (2011). *A Path to Prosperity: new directions for African Livestock*. Edingburgh: GALVmed (www.GALVmed.org).

- Lundvall, B.A. (2010). *National Systems of Innovation – Towards a Theory of Innovation and Interactive Learning*. London, New Delhi, New York: Anthem Press.

- Maarse, L. (2011). *Proceedings Introduction workshop for Newcastle Disease Pilot*, Orissa, India, 9th and 10th March 2011, Bhubaneswar, India: GALVmed.

- McMahon, A. (2008). *Case Study of the Poultry and Grape/Raisin Sub-sectors in Afghanistan. Guided case studies in value chain development for conflict-affected environments*. Kabul: USAID, Chemonics Int. Inc., Weidemann & Associates, Inc.

- Meeta Punjabi, R. K. (2011). *Is there potential demand for Newcastle Disease Vaccines in backyard poultry sector in India?* In-depth analysis from Madhya Pradesh, Orissa and Haryana. New Delhi: Creative Agri Solutions.

- Priya Deshingkar, J. F. (2008). *Livestock and poverty reduction in India: findings from the ODI livelihood options project*. Discussion Paper 8. Targeting and Innovation. Nairobi: International Livestock Research Institute.

- Rajshekhar, V. (2010). *Active epilepsy as an index of burden of neurocysticercosis in Vellore district, India*. available at: <http://www.neurology.org/content/67/12/2135>.

- Rushton, K. S. (2007). *Veterinary services for poultry production*. Rome: Animal Production and Health Division, Food and Agriculture Organization of the United Nations (FAO).

- Sagari R. & Ramdas, S. A. (2009). *Unpacking the 'Poor Productivity' Myth: Women Resurrecting Poultry Based Livelihoods in India*, SAGP25. Delhi: South Asia Pro-poor Livestock Policy Programme (www.sapplpp.org).

- Shaheen Akter, J. F. (2008). *Livestock, vulnerability, and poverty dynamics in India*. Findings from ODI livelihood Options Project Panel Survey. Discussion Paper No. 10. Targeting and Innovation. Nairobi: International Livestock Research Institute.

- Upton, M. (2008). *The role of livestock in economic development and poverty reduction*. Rome: United Nations Food and Agriculture Organisation, Pro-Poor Livestock Policy Initiative; available at: www.fao.org/ag/againfo/projects/en/pplpi/docarc/wp10.pdf.

- USAID-Afghanistan Mission, C. I. (2004). *Rebuilding Agriculture Markets Program, Afghanistan Poultry sub-sector Assessment, Findings and Recommendations*. Kabul, Afghanistan: Chemonics, RAMP Partners, Ministry of Agriculture and Animal Husbandry.

- World Bank. (2010). *Implementation Status and Results. Avian Influenza Control and Human Pandemic Preparedness and Response Project (P100935)*.

- World Bank. (2012). *World Development Report 2012: Gender Equality and Development*. Washington DC, USA: World Bank; available at http://publications.worldbank.org/index.php?main_page=product_info&cPath=0&products_id=24225.

9 Annex one: GALVmed South Asia Matrix as part of Strategic Plan 2012–2017

Table one: Context aspects of GALVmed’s Strategy for South Asia – Period: 2012–2017

CONTEXT	TARGET POPULATION	GOALS Regarding each goal, GENDER SENSITIVITY applied	ASSUMPTIONS
<ol style="list-style-type: none"> 1 Poverty in South Asia is primary rural – over 80% of all poor are in rural areas and directly and indirectly depend on agriculture for their livelihood; 2 Within agriculture, livestock has the potential of supporting and improving more livelihoods than any other sector (distribution of livestock is more equitable than that of land); 3 The region is expected to register sustained and significant increase in the demand for livestock products. Translating this expansion into sustained growth for millions of livestock dependent poor is challenging; 4 Marginal and small female/male farmers own almost 60% of cattle and buffaloes, 67% of goats and more than 73% of pig’s population, while scavenging poultry systems are entirely in the hand of marginal farming households. Their contribution to livestock economy is significant, while it mainly concerns business of women (FAO, 2003); 5 The poor households in South Asia keep primary livestock as a buffer to deal with domestic emergencies and other urgencies (drought period, for instance). It also forms an important collateral for private money lenders, while livestock wealth is taken into account when lending from them; 6 Poor infrastructure facilities and inadequate health services leads to heavy economic losses for female/male farmers due to high mortality; for instance, annual losses due to PPR in South Asia count for an estimated 3 billion US\$ per annum; 7 The threat of the spread of livestock and related human diseases has increased and health and safety regulations turn more stringent; 8 While the region is the source of very dynamic innovative solutions that could be used to address the needs of poor f/m livestock keepers, no mechanism exist to promote or support their access; 9 The changing roles of public and private institutions implies that new models of public–private partnership are being experimented whereby private actors tend towards inclusive business, perceiving ‘the poor’ as new business lines; 10 Reaching out to the poorest whose livelihoods depend on incomes from livestock requires institutional structures that they themselves manage. 	<p>Direct: (intended audience / ultimate beneficiaries): <i>Poor female/male smallholder and landless female/male agricultural workers rearing or interested in keeping small animal(s) (small ruminants, pigs and poultry).</i></p> <p>Specifically:</p> <ul style="list-style-type: none"> > those living below the poverty line (≤ 2 US dollar per day); > and belonging to Tribal – and Dalit and other disadvantaged communities; > or Communities in marginal and/or isolated geographical areas (Central, Eastern and North Eastern part of India), (Mountain Areas of Nepal and North Eastern India, etc.); > and more often than not they are female livestock rearers. <p>Indirect: (involved in and therefore effected by interventions initiated/facilitated by GALVmed).</p> <p>Range of institutions (actors/stakeholders) along the value chain consisting of three categories namely:</p> <ul style="list-style-type: none"> > Public sector: Local, State, Regional (inter-State) and National Governments and International Organisations; > Private sector: local (commercial vaccine producers, vendors, agri shops, dealers to self employed professionals), national, regional and global firms/companies ; > Civil society: Non-Governmental Organisations, producer/user/self help groups, religious institutions, advocacy groups, community-based organisations, cooperatives, etc. 	<ol style="list-style-type: none"> 1 Advantages of the technological and innovation capacity present in the region used in order to develop animal health tools that would address the needs of poor female/male livestock keepers within South Asia and beyond (e.g. Sub Sahara Africa); 2 Effective partnerships (within and beyond the region, e.g. South–South), aiming at developing solutions (vaccines, medicines, diagnostics) for non mainstream products and neglected diseases as well as technologies that will allow their development and production at low cost, established and functional; 3 Specific gaps in animal health access and service delivery regarding small animals identified and studied; 4 Sustainable delivery models which ensure affordable access to animal health and husbandry services, tools and products by poor fe/male livestock keepers developed (new) or improved (existing); 5 One-Health approach (from grass root perspective) successfully tested and lessons learnt promoted; 6 Through promoting innovation and new/unconventional access strategies, private actors enabled to grasp business opportunities involving poor female/male livestock keepers, 7 Poor female/male livestock keepers empowered, capacitated and organised; able to access livestock services, inputs and market their products partially; 8 Small animals are kept as an integral part of the prevailing farming systems, and contribute to ecological sustainability; 	<ol style="list-style-type: none"> 1 Political stability within the participating countries; 2 New actors join GALVmed South Asia, ensuring long term engagement; 3 Private actors willing to form partnerships and invest in GALVmed South Asia; 4 Private actors perceive poor communities as a potential business line; 5 Relevant private actors interested in developing inclusive business (CSR)/perceive the poor as potential business line; 6 Women’s right to own and access productive resources, including leisure, are recognised; 7 Investing in women perceived as smart business; 8 Sufficient capacity and willingness to operate at all levels in a gender-sensitive manner; 9 Govt depts. motivated to work as Partners with private actors and vice-versa; 10 SAARC countries forum is active and considers the role of livestock in development; 11 Conducive environment allowing livestock keepers to organise themselves as societies, producer organisations, associations, countrywide; 12 Inter-Ministerial and Inter-State cooperation and sharing of information is happening; 13 Apart from supporting development of large ruminants, Governments increase their attention towards small animals (pigs, poultry, SR);

Table two: Design aspects of GALVmed's Strategy for South Asia – Period: 2012–2017

OBJECTIVES inclusive GENDER EQUITY	INPUTS / RESOURCES	ACTIVITIES	SUSTAINABLE STRATEGIES	OUTPUTS Accessible and affordable by poor livestock keepers	INDICATORS Disaggregated by GENDER: ME, FE, MA, FA, MC, FC (at least measurable for pilot areas)
<ol style="list-style-type: none"> 1 Anticipating on the South Asian technological and innovation capacity, mediate so that GALVmed's partners within and beyond South Asia have access to it; 2 Sustainable and quality Newcastle Disease vaccines manufacturing and delivery system in place whereby using the thermo stable vaccines; 3 Service Delivery models centred around poultry health, but also addressing all aspects of backyard poultry production including access to markets <i>in situ</i>; 4 Pilots aiming at improving preventive and curative measures to control ND, PC, and PPR and scoping Brucellosis (SR), CSF and helminthiasis successfully conducted; 5 Species Platform (managing diseases, multi disciplinary and learning approach) and related Communities of Practice (CoPs) relevant for small animals functional and able to influence relevant actors; 6 Development of business, management and technical skills of local manufacturers, distributors and retailers of GALVmed-linked products supported; 7 As per need and demand, punctual interventions related to assuring quality veterinary vaccines and medicines, as well as appropriate regulatory and quality control mechanism materialised. 	<ul style="list-style-type: none"> > Lean office with advanced communication facilities; > Human Resources covering capacities regarding: <ul style="list-style-type: none"> • Advanced Veterinary science; • Business and Market development; • Agriculture Innovation Systems; • One Health approach; • Monitoring and Evaluation (processes, impact); • Facilitation and Moderation skills; • Gender mainstreaming and – budgeting, • Inclusive Business; • Finance and administration, > Pro-active Regional Advisory Committee; > Network of Associated Professionals committed to GALVmed's mission (e.g. as members of the Disease forums, CoPs, Reg. Adv. Com., etc.) 	<ol style="list-style-type: none"> 1 ND pilots to be initiated in new areas and pilots taken up for PPR, PC; 2 Identifying commercial producer for thermo-stable vaccine and support such in production and marketing of the vaccine; 3 Continue and expand current ND pilot, but with thermo-stable vaccine where possible; 4 Facilitate the registration, commercial production and marketing of TSOL 18 vaccine and Oxfendazole for pigs in the region; 5 Organising advocacy and media interventions to build case around zoonotic diseases (PC, Brucellosis, etc.) and supported by vaccine production; 6 Initial scoping / feasibility study for DIVA vaccine for Brucellosis in small ruminants; 7 Based on the disease forums within Species Platform, and making use of related CoP, organising knowledge-sharing activities with all partners, respective State AH depts., other NGOs, vaccine producers, including synergizing with like-minded institutions such as National Ministries, Research entities, FAO, IFAD, ILRI SA, SA PPLPP, WHO, policy makers; 8 As per need, organising gender sensitisation activities with all relevant stake holders, thereby ensuring mainstreaming of gender; 9 As per need and demand, invest in business management, marketing and technical skills of manufacturers, local distributors and retailers of GALVmed-linked products; 10 Identification of gaps in policy, regulatory framework and veterinary legislations and developing action plan to address these; 11 Developing inputs for extensive use of media to highlight issues around livestock diseases and in particular zoonoses impacting livestock and human health and the livelihoods of poor. 	<ol style="list-style-type: none"> 1 The focus will be on development of markets through innovative and unconventional initiatives, by considering importance of both formal and informal markets, and considering supply and demand sides; 2 As much as possible the agriculture innovation system approach (AIS) will be used to strengthen value chain for poor livestock producers, in particular the 'the inputs & services' and 'production'; 3 GALVmed SA is in principle the facilitator and, where opportune, the know-how provider; it acts as broker, facilitator, coach and knowledge provider. Thus, no dependency is created; 4 One-Health approach enables the poor to simultaneously address human and animal health issues; e.g. PC is easier to address when human health is considered in equal terms; 5 Aligning and synergising with other programmes and institutions to ensure maximum learning and outreach; while it forms the basis for the Disease forums and related CoPs, a range of activities can be delivered through them; 6 Use of appropriate and innovative communication methods and means to understand the needs and demands of the clients, disseminate information, share experiences, promote successes, etc. 	<ol style="list-style-type: none"> 1 Thermo-stable ND vaccine in the SA market; 2 Effective PC de-wormer in the SA market; 3 Appropriate vaccines for backyard farmers to use for PPR, ND and PC, in the S. Market; 4 Species Platforms functional and at least four related CoPs; 5 At least one site with a successful One-Health approach; 6 Weaknesses in relevant policies, regulatory frameworks, veterinary legislations identified and first facilitation work successful. 	<ol style="list-style-type: none"> 1 Enhanced capacity among participating actors to deliver, to reach out, to sell; 2 Improved access to services and inputs; reduced gender disparity; 3 Increased uptake of appropriate and effective animal health and husbandry practices; 4 Incidence of diseases among small animals reduced with at least 20%; 5 Increased productivity and production of keeping small animals reflected by productivity parameters (weight gain, hatchability rate, flock size, weight at birth, etc.); 6 Improved food and nutritional security and income gains; 7 Accumulation of, access to and control over livelihood assets; 8 Number of issues successfully handled through Species Platform and different disease forums within it; 9 Improved, enabling policy environment (access to services and markets for poor livestock keepers, scope for business actors to reach out to clients who are poor); 10 Business turnover (medicine, vaccines related to ND, PPR, PC) increased significantly.

10 Annex two: GALVmed Disease Matrix (Draft Version 1: 25 Feb 2011) Section – Asia – South Asia (Bangladesh, Bhutan, India, Nepal and Sri Lanka)

Geographical region	Species	Farming systems	Diseases	Relevance poor people	Project Status	Technologies
Asia – South Asia (India, Nepal, Bangladesh, Bhutan, Sri Lanka)	Cattle (dairy & beef)	Small holder, peri-urban	FMD	2	4	Compatible vaccines delivered; novel vaccines
			Brucellosis	1	2	Vaccines, Pen-side diagnostics
			Haemorrhagic septicaemia	2	2	Vaccine access
			Lumpy skin disease	?	4	Vaccine
			Parasitic gastroenteritis	1	4	Sustainable use of anthelmintics; novel vaccines
	Shoat	Small holder; peri-urban	PPR	1	1	Vaccine; diagnostics
			Brucellosis	1	2	Vaccine; diagnostics
			Sheep & goat pox	2	4	Combination vaccines
			Parasitic gastroenteritis	1	4	Sustainable use of anthelmintics; novel vaccines
	Pig	Small holders; peri-urban	Porcine cysticercosis	2	1	Combination vaccines
			CSF	2	4	Vaccine; diagnostics; treatment
			Japanese Encephalitis	3	4	Vaccine, diagnostics
	Poultry	FAO sector 3 & 4	Newcastle disease	1	1	Thermo-stable small pack vaccine
			Fowl pox	1	2	Vaccine
			Avian Influenza	1	4	Vaccine, diagnostics

Relevance to poor people

1	Very relevant
2	Relevant to many
3	Relevant to some
4	Low relevancy

Project Status

1	Current Project
2	Proposal in place
3	Intended area of work
4	No plans

11 Annex three: SWOT Analysis: South Asia small animal health situation

Strengths

- well-developed private sector
- public veterinary services partially privatised
- adequate veterinary legislation
- vibrant pharmaceutical (incl. veterinary medicines) sector
- some business communities concerned about growing gap between rich and poor
- reasonable research and laboratory infrastructure
- within a set of conditions, the private sector can sell to Govt. programmes (vaccines, equipment, etc.)

Opportunities

- public-private – civil society cooperation concerns Central Govt. policy
- Central Govt. open to ONE-HEALTH approach
- diseases of small animals are now on the agenda of State/Central Govt.
- small animals are kept by the poor disadvantaged communities in particular
- conducive policies for conservation & development of indigenous breeds incl. small animals

Weaknesses

- performance assessment of public service vets linked to reporting (incidence of diseases)
- widespread corruption of all major sectors: public, private & civil society
- larger budget allocations centralised
- cooperation between public-private sector remains weak
- promotion in public sector not as per performance
- huge difference in management and development of livestock sector per State
- outreach of both public & private sector animals health services concentrated in easy accessible areas
- public sector remains cow/buffalo oriented
- veterinary legislation concern State subject; much variation among States
- research regarding animal diseases poorly coordinated
- research agenda (animal diseases, livestock production) not set by stakeholders but centrally dictated
- CGIAR institutions (incl. ILRI) operate separately from Nat. /Regional research institutions
- NGOs are not well equipped to work in Livestock and Animal health areas
- lack of livestock policies; if present the coverage of small animals is poor

Threats

- purposeful under reporting of disease incidence
- wide spread corruption including in terms of diagnosis / administering drugs, etc.
- big private poultry players (integrators) prefer to abandon BYP sector; perceived as spreading HPAI
- community animal health workers not covered by veterinary legislation & not part of referral system
- the poor not perceived as potential clients
- poor livestock keepers are not organised and not able to express their voice

12 Annex four: PPR disease incidence and estimated economic loss

Table: PPR Disease incidence and economic losses						
Sheep						
	Population (millions)	PPR Incidence (million)	Mortality (millions)	Economic loss (million US\$)		
Country	Sheep	20 % of the population	40 % of affected animals	Due to mortality		
Nepal	0,88	0,18	0,07	3,52		
India	80,00	16,00	6,40	320,00		
Bangladesh	2,80	0,56	0,22	11,20		
Bhutan	0,01	0,00	0,00	0,05		
Sri Lanka	0,01	0,00	0,00	0,03		
Goat						
	Population (millions)	PPR Incidence (million)	Mortality (millions)	Economic loss (million US\$)		
Country	Goat	20 % of the population	40% Mortality of affected animals	Due to mortality		
Nepal	8,88	1,78	0,71	42,62		
India	135,00	27,00	10,80	648,00		
Bangladesh	21,50	4,30	1,72	103,20		
Bhutan	0,03	0,01	0,00	0,15		
Sri Lanka	0,38	0,08	0,03	1,81		
Sheep and Goat			Sheep and Goat			
Country	Total Incidence	Total mortality	Production Loss (million US\$)	Treatment cost (million US\$)	Overall loss	
	Millions	Millions	Due to disease	Due to disease	Mio US\$	%
Nepal	1,95	46,14	59,62	9,76	115,52	3,88
India	43,00	968,00	1386,00	215,00	2.569,00	86,29
Bangladesh	4,86	114,40	149,16	24,30	287,86	9,67
Bhutan	0,01	0,07	0,28	0,04	0,40	0,01
Sri Lanka	0,076772	1,84	2,31	0,38	4,54	0,15
				Total	2.977	100,00
Assumption:						
1	PPR incidence estimated as 20 percent of the population					
2	Mortality on account of PPR is estimated as 40 percent of total affected animals					
3	Unit value of Sheep is taken as 50 US\$ and Goat as 60US\$					
4	Economic losses arrived as zero value for each animal that has died due to PPR					
5	Production losses estimated as 60 percent of the unit value (30 US\$ for sheep and 36 US\$ for goat)					
6	Treatment cost is taken as 5US\$ for each animal affected by PPR					
Economic Gain can be calculated as Zero mortality, Zero incidence and Zero production losses and Zero treatment cost						

Source: (Rajasekhar M, and Rao, CK 2012)

12 Annex five: South Asia – selected poverty-related indicators

The table below shows that India started falling behind every other South Asian country (with the partial exception of Pakistan) in terms of social indicators, even as it is doing so well in terms of per capita income.

Indicator	Period	India	Bangladesh	Bhutan	Nepal	Pakistan	Sri Lanka
GNI per 813 capita (PPP, current int. \$)	1990 ^a	877.0	543.0	1,280.0	513.0	1,210.0	1,420.0
	2010	3,560.0	1,800.0	4,950.0	1,200.0	2,780.0	4,980.0
Life Expectancy at birth (yrs)	1990	58.0	54.0	52.0	54.0	61.0	69.0
	2010	64.0	67.0	67.0	67.0	67.0	74.0
Infant mortality rate (per 1,000 live births)	1990 ^a	81.0	99.0	96.0	97.0	96.0	26.0
	2010	48.0	38.0	44.0	41.0	70.0	14.0
Under-5 mortality rate	1990 ^a	115.0	143.0	139.0	141.0	124.0	32.0
	2010	63.0	48.0	56.0	50.0	87.0	17.0
Maternal Mortality Ratio	1990	570.0	870.0	940.0	870.0	490.0	91.0
	2008	230.0	340.0	200.0	380.0	260.0	89.0
Total fertility rate (children per woman)	1990 ^a	3.9	4.5	5.7	5.2	6.0	2.5
	2009	2.7	2.3	2.5	2.8	3.5	2.3
Access to improved sanitation (%)	1990	18.0	39.0	-	11.0	28.0	70.0
	2008	31.0	53.0	65.0	31.0	45.0	91.0
Infant immunisation (DPT, %)	1990	59.0	64.0	88.0	44.0	48.0	86.0
	2008 ^b	66.0	94.0	96.0	82.0	80.0	98.0
Infant immunisation (measles, %)	1990 ^a	47.0	62.0	87.0	57.0	50.0	78.0
	2008	71.0	98.0	97.0	80.0	82.0	97.0
Mean year of schooling	1990	3.0	2.9	-	2.0	2.3	6.9
	2010	4.4	4.8	-	3.2	4.9	8.9
Female illiteracy rate, age 15-24 years (%)	1990 ^a	49.0	38.0	-	33.0	-	93.0
	2010 ^b	74.0	77.0	68.0	77.0	61.0	99.0
Proportion (%) of underweight children	1990 ^c	54.9	61.5	34.0	-	39.0	29.0
	2010 ^c	43.5	41.3	12.0	38.8	-	21.6
* Three-year average centred on the reference year (e.g. 1989-91 average when the reference year is 1990)							
^a 1990 for China; the Sri Lanka figure is an interpolation between 1981 and 2001 figures.							
^b 2006 for India, 2005 for Bhutan, 2008 for Pakistan and Sri Lanka, 2009 for other countries (latest World Bank)							
^c 1988 for Bhutan, 1991 for Pakistan, 1987 for Sri Lanka							
^d 2005 for China, 2006 for India and Nepal, 2007 for Bangladesh, 2008 for Bhutan, 2009 for Sri Lanka (latest)							
Sources: Mean of years of schooling and life expectation from Human Development Report 2010, online							

Table 1: South Asia: Selected Indicators (1990 and later)

The comparison between Bangladesh and India is a good place to start. During the last 20 years or so, India has grown much richer than Bangladesh: per-capita income was estimated to be 60% higher in India than in Bangladesh in 1990, and 98% higher (about double) in 2010. But during the same period, Bangladesh has overtaken India in terms of a wide range of basic social indicators: life expectancy, child survival, fertility rates, immunisation rates, and even some (not all) schooling indicators, such as estimated “mean years of schooling”. For instance, life expectancy was estimated to be four years longer in India than in Bangladesh in 1990, but it had become three years shorter by 2008. Similarly, the child mortality rate was estimated to be about 24% higher in Bangladesh than in India in 1990, but it was 24% lower in Bangladesh in 2009.

Most social indicators now look better in Bangladesh than in India, despite Bangladesh having barely half of India’s per capita income.

INDIA'S RANK AMONG SIX SOUTH ASIAN COUNTRIES (TOP = 1, BOTTOM = 6)		
	IN 1990	Around 2009
GNI	4	3
Life expectancy	3	6
Infant mortality	2	5
Under-5 mortality rate	2	5
Maternal mortality rate	3	3
Total fertility rate	2	4
Access to improved sanitation	4-5 ^a	5-6
Child immunisation (DPT)	4	6
Child immunisation (Measles)	6	6
Mean years of schooling	2-3 ^a	4-5
Female literacy rate, age 15-24	2-3 ^a	4
Proportion of underweight children	4-5 ^a	6

^aAmbiguous rank due to missing data for Bhutan (or Nepal, in case of 'underweight children'). Source: see previous table.

The six countries considered here are Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka

Table 2: India's rank among the six South Asian countries

No less intriguing is that Nepal also seems to be catching up rapidly with India, and even overtaking India in some respects. Around 1990, Nepal was way behind India in terms of almost every development indicator. Today, social indicators for both countries are much the same (sometimes a little better in India still, sometimes the reverse), in spite of per-capita income in India being about three times as high as in Nepal. To look at the same issue from another angle, the table above displaying India's "rank" among South Asia's six major countries, around 1990 as well as today (more precisely, in the latest year for which comparable international data are available). As expected, in terms of per capita income, India's rank has improved – from fourth (after Bhutan, Pakistan and Sri Lanka) to third (after Bhutan and Sri Lanka). But in most other respects, India's rank has worsened, in fact, quite sharply in many cases.

Overall, India had the best social indicators in South Asia in 1990, next to Sri Lanka, but now looks second worst, ahead of only Pakistan.

Looking at their South Asian neighbours, the Indian poor are entitled to wonder what they have gained – at least so far – from the acceleration of economic growth.

Source: (Jean Dreze, 2011).



14 **Annex six: Lessons learnt that have relevance in formulating strategy for GALVmed South Asia**

The South Asia Pro-poor Livestock Policy Programme (www.sapplp.org) has been documenting Good Practices, namely those in the interest of poor female/male farmers. The most relevant lessons learnt are presented below.

- a** The current system of livestock extension in South Asia, which is government-driven in Bangladesh, Bhutan and India, only reaches a minority of farmers, and extension staff are rarely trained to provide advice on small-scale poultry farming practices. Governments are attempting to enhance the quality and quantity of extension services, which is critical to support backyard and small-scale poultry farming, but the focus on poultry is still very limited.
- b** Good Practices highlight that animal health services and veterinary supplies can be delivered at farmers' doorsteps on a sustainable basis, typically through the services of trained animal health workers. Some institutional changes in the way animal health services are provided, including a focus on public-private partnership (animal health workers) and on market functioning (farmers are willing to pay for good services) may improve the coverage and quality of services, though political economy issues are likely to make such reforms particularly challenging (for example, veterinarians may oppose the institutionalization of animal health workers).
- c** Good Practices underscore that, in backyard poultry production systems, returns to investments are higher in nondescript and indigenous poultry as compared to exotic birds because the former are more resistant to local diseases, and because of the high cost of feed for exotic birds, which are poor scavengers. Note, however, that it makes little sense for farmers to keep more than a few nondescript/indigenous birds when the scavenging base is limited, because the cost of feed is higher than the expected returns, in terms of chicks, live birds, eggs and poultry meat.
- d** Overall, Good Practices provide evidence that backyard and small-scale, market-oriented poultry farming significantly contributes to farmer livelihoods, in terms of food and cash, and as a buffer stock, and that appropriate, often minor changes in technical and institutional dimensions generate handsome returns for farmers. Changes in the current policy and institutional setting such as an increased focus on nondescript birds and the inclusion of poultry in the current system of animal health services will definitely enhance the contribution of poultry to farmer livelihoods, thereby reducing poverty and increasing food security. However, political economy issues and institutional rigidities may thwart any attempt to revamp the current policy framework. For instance, policy makers may be unwilling to invest public resources in backyard poultry farming because, despite positive returns to investments, benefits to smallholders are difficult to measure; veterinarians may oppose the institutionalization of CAHWs on the assumption that they would make it unprofitable for them to work in rural areas.

Regarding CAHWs, it was observed that when they are carefully and consciously selected from within the community and trained either by NGOs or Government, they can serve as the missing link between the Animal Husbandry Department (AHD) and poor livestock keepers. These CAHWs provide vaccinations, first aid and advice on management practices on a payment basis and are self sustaining as long as they are linked to either NGO or AHD for referral, input supply and refresher trainings. The incidence of diseases – such as ND in poultry – has shown decrease in the areas covered by CAHWs leading to increase in flock size and incomes²⁶.

²⁶ Reference: Sagari & Ramdas 2009
<http://sapplp.org/goodpractices/small-holder-poultry/SAGP25-unpacking-the-poor-productivity-myth/>

DFID (South Asia) has been running regional programmes and some of the lessons learnt might inspire GALVmed South Asia.

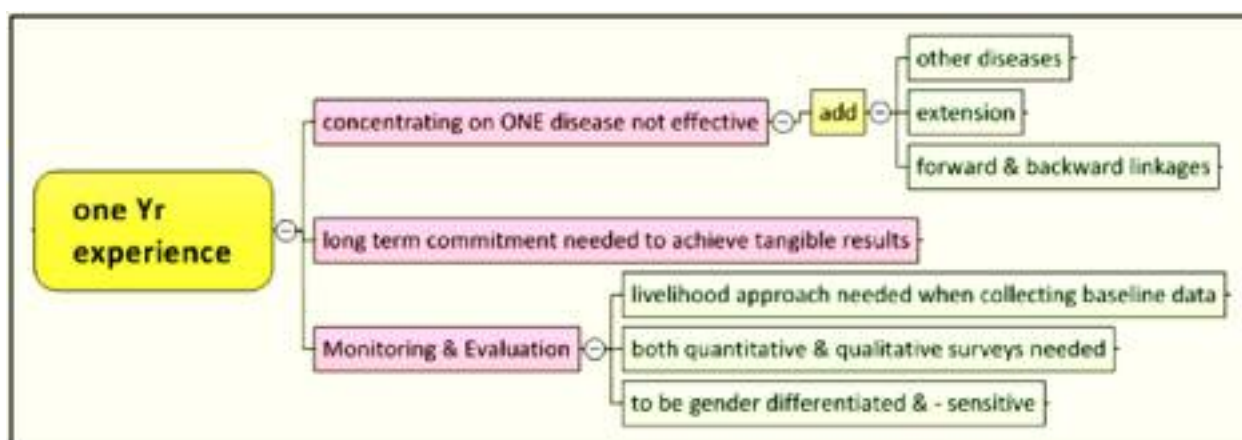
These are presented below, followed by the first lessons learnt by GALVmed South Asia.

- 1 South Asia’s regional characteristics differ from other regions, for example Africa. Strategic, well-targeted, catalytic regional investments that are modest, responsive, timely and flexible are more likely to reap benefits in this region.
- 2 These investments can help to ease constraints, as well as make the case and provide evidence for much larger investments from multinationals, private sector and national governments in key regional and cross-border interventions.
- 3 Interventions where acting in a collaborative and coordinated way will achieve much greater benefits for all – and especially for poor people – by increasing their economic opportunities and making their livelihoods more resilient to economic, environmental and political volatility.

In its first year of operations, GALVmed South Asia learnt that concentrating on one disease only at the delivery point is too limited and will not be effective; also, considerable time is needed to achieve tangible results that can be sustained.

Regarding monitoring and evaluation, two aspects need more focus, namely gender²⁷ and livelihoods²⁸, while a range of tools should be used when Monitoring and Evaluation is at stake.

Mind Map 3: One Year GALVmed experience in SA; first lessons learnt



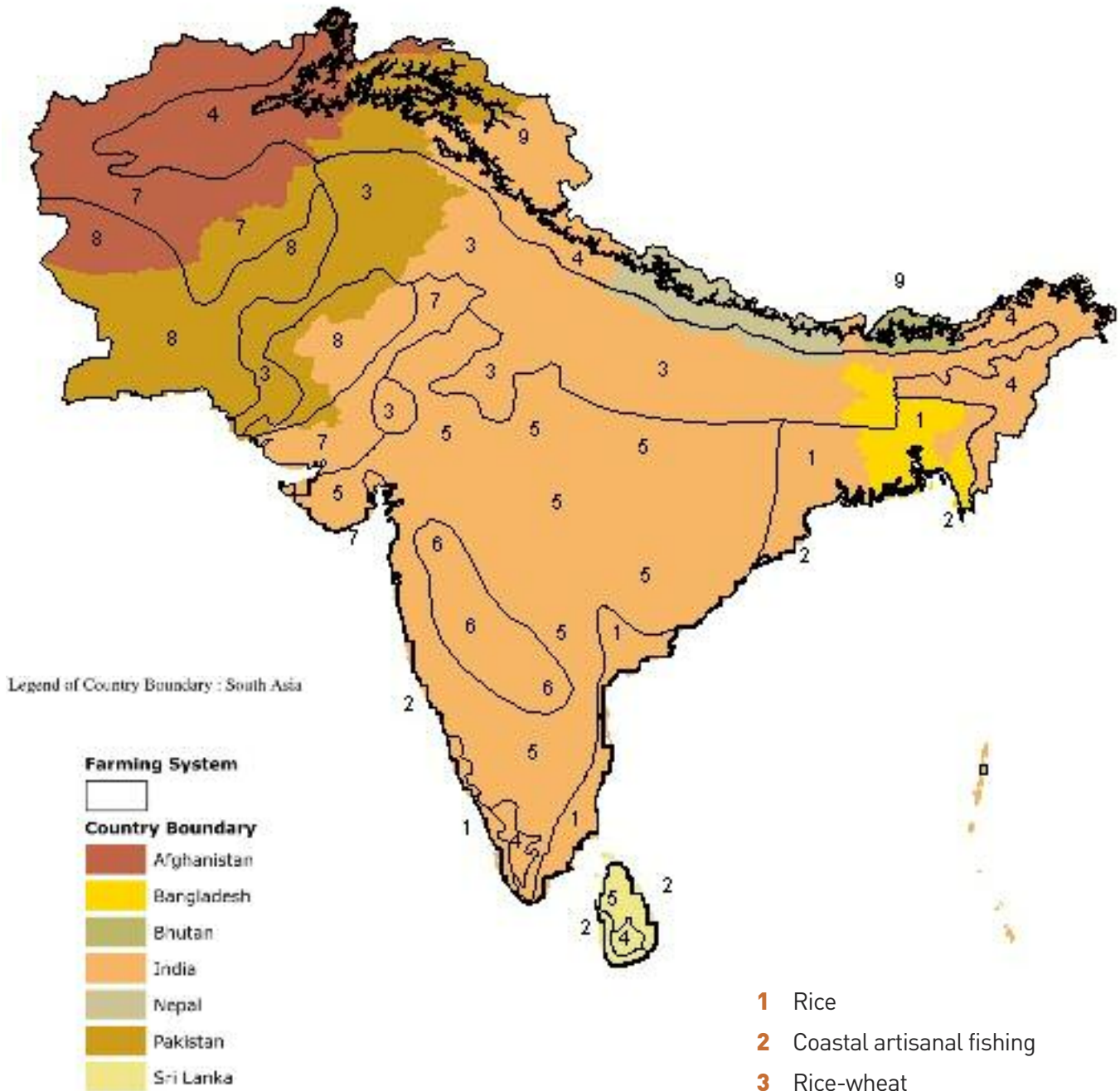
²⁷ As per (A. Waters-Bayer, 2010), experience in many parts of the world has shown that, if women’s roles and responsibilities in animal production are recognized, if women have more rights of ownership over livestock, if women have better access to livestock services and markets, if women have more say in decision-making about inputs and outputs of animal production and have more control over the income from this, then family welfare can be improved and poverty and hunger can be reduced.

Applying a gender lens in livestock-related interventions means paying particular attention to:

- Their implications for women’s workload,
- Their implications in terms of women’s control over the means of production and benefits from it
- Their use and enhancement of the knowledge and innovativeness of women, e.g. through their participation in adaptive research at grassroots level.

²⁸ Livelihoods approaches are a way of thinking about the objectives, scope and priorities for development. They place people and their priorities at the centre of development. They focus poverty reduction interventions on empowering the poor to build on their own opportunities, supporting their access to assets, and developing an enabling policy and institutional environment. For more information visit: <http://www.eldis.org/go/topics/dossiers/livelihoods-connect/what-are-livelihoods-approaches> .

15 Annex seven: Overview of country boundaries and farming systems in South Asia



Source: http://www.fao.org/farmingsystems/maps_SAS_en.htm

- 1 Rice
- 2 Coastal artisanal fishing
- 3 Rice-wheat
- 4 Highland mixed
- 5 Rainfed mixed
- 6 Dry rainfed
- 7 Pastoral
- 8 Sparse (arid)
- 9 Sparse (mountain)

16 Annex eight: Key gender indicators by country for 2000, 2004 and the most recent year available with aggregations for income level

GENDER at a glance -> India - South Asia							
	India		Lower middle		South Asia		
Basic Demographic Indicators							
Population							
Total (millions)	2000	2004	2010	2000	2010	2000	2010
	1,016	1,096	1,171	2,109	2,461	1,380	1,579
Life expectancy at birth (years)							
Female (% of total)	48	48	48	49	49	48	49
Male	61	62	63	61	63	61	64
Fertility rate							
Female	63	61	56	64	67	63	56
Total (births per woman)	3.1	2.8	2.7	3.4	3.0	3.3	2.8
Adolescent (births per 1,000 women ages 15-19)	106	91	82	85	69	101	75
Mortality rate, infant (per 1,000 live births)	68	55	48	63	50	66	52
Education							
Gross enrollment rate (% of relevant age group)							
Mortality rate, under-5 (per 1,000)							
Primary, male	85	73	55	90	69	89	67
Primary, female	102	114	..	101	110	97	113
Secondary, male	56	110	..	87	104	81	107
Secondary, female	54	59	80	52	61	50	58
Tertiary, male	38	40	56	42	55	37	51
Tertiary, female	11	13	..	13	17	10	13
Primary completion rate, male (% of relevant age group)	8	9	..	10	14	6	9
Primary completion rate, female (% of relevant age group)	80	84	95	79	80	74	87
Literacy rate, adult male (% of males ages 15 and above)	64	81	94	68	86	60	84
Literacy rate, adult female (% of females ages 15 and above)	73	75	..	77	80	70	73
Health							
Contraceptive prevalence (% of women ages 15-49)	48	51	..	58	62	45	50
Unmet need for contraception (% of married women ages 15-49)	47	56	54	44	50	45	51
Pregnant women receiving prenatal care (%)	16	13	..	16	14	15	15
Births attended by skilled health staff (% of total)	60	74	75	63	78	58	70
Maternal mortality ratio (modeled estimate, per 100,000 live births)	43	47	53	49	56	36	47
Labor force and wages							
Labor force, total (millions)	390	280	230	410	300	430	290
Labor force, female (% of total labor force)	187	427	459	187	471	514	627
Labor force participation rate, male (% of male population ages 15-64)	27	27	28	32	32	28	29
Labor force participation rate, female (% of female population ages 15-64)	85	83	85	83	83	83	85
Vulnerable employment, male (% of male employment)	35	35	35	40	41	35	37
Vulnerable employment, female (% of female employment)	..	81	..	..	..	..	..
Ratio of female to male wages in manufacturing	..	89	..	..	..	..	..
Unemployment, male (% of male labor force)	..	..	..	66	..	81	..
Unemployment, female (% of female labor force)	4	4	..	5	..	4	..
Unemployment, female (% of female labor force)	4	5	..	6	..	5	..
Female legislators, senior officials and managers (% of total)	..	..	..	..	..	..	..
Female professional and technical workers (% of total)	..	..	..	..	..	..	..
Proportion of wage held by women in national parliaments (%)	9	8	11	9	15	7	19

Table 3: Key gender indicators by country for 2000, 2004 and the most recent year available with aggregations for income level

Reference: (World, 2012)

List of Abbreviations

asf	animal source food
AHD	Animal Husbandry Department
AIS	Agriculture Innovation System
AP	Andhra Pradesh
BAIF	Bhartiya Agro Industries Foundation
BLP	Below Line of Poverty
BMPCS	Bhodal Milk Producers' Cooperative Society
BYP	Backyard Poultry
CAHW's	Community Animal Health Workers
CDA	Technical Centre for Agricultural and Rural Cooperation (Centre technique pour l'agriculture)
CEDPA	Centre for Development and Population Activities
CF	Community Facilitators
CII	Confederation of Indian Industries
CoP	Community of Practice
CSF	Classical Swine Fever
CSR	Corporate Social Responsibility
DAHD	Department of Animal Husbandry & Dairying
DAI	Development Alternatives, Inc.
DFID	Department for International Development
DIVA	Differentiating Infected from Vaccinated Animals
DPT	Refers to a class of combination vaccines against three infectious diseases in humans: diphtheria, pertussis & tetanus
FA	Female Adults
FAO	Food and Agriculture Organization for United Nations
FC	Female Children
FE	Female Elders
FMD	Foot & Mouth Disease
GALVmed	Global Alliance for Livestock Veterinary Medicines
GDI	Gender Disparity Index
GNI	Gross National Income
HI	Heifer International
HHs	Households
HIDI	Human Institutional Developmental Index
HPI	Health Poverty Index
HPAI	Highly Pathogenic Avian Influenza
HS	Haemorrhagic Septicaemia
IFAD	International Fund for Agricultural Development
IFAH	International Federation for Animal Health
IIL	Indian Immunologicals Ltd.
ILRI	International Livestock Research Institute
LCC	Livestock Care Centres
MA	Male Adults
MAIL	Ministry of Agriculture, Irrigation and Livestock
MC	Male Children
ME	Male Elders

List of Abbreviations

NCC	Neorocysticercosis
ND	Newcastle Disease
NDDDB	National Dairy Development Board
NGO	Non-Government Organization
OIE	World Organization for Animal Health
PC	Porcine Cysticercosis
PPP	Purchasing Power Parity
PPR	Peste des Petits Ruminants
PRADAN	Professional Assistance for Development Action
SA	South Asia
SAARC	South Asian Association for Regional Cooperation
SA-PPLPP	South Asia Pro-Poor Livestock Policy Programme
SARAC	South Asia Regional Advisory Committee
SC & ST	Schedule Caste & Schedule Tribe
SHG's	Self-help Groups
SPFA	Spin Ghat Poultry Farmers' Association
SR	Small Ruminants
SWOT	Strengths, Weaknesses, Opportunities, Threats
TANUVAS	Tamil Nadu Veterinary and Animal Services University
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization





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